THE AMERICAN ARCHITECT

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Hotel Webster, Chicago

FRIDSTEIN & COMPANY, *Engineers*

AMONG the more important hotel buildings constructed in this country during the year 1920 is the Hotel Webster at Chicago. Even in years more favorable to building construction with a greater volume of work done, this building would be well worthy of attention. Notwithstanding the unsettled labor conditions and high cost of materials and labor, and at times a scarcity of both, this building was erected complete at a cost of 60 cents per cubic foot for materials and labor, not including commissions and carrying charges. This was made possible through careful designing and the thorough and complete preparation of the plans and specifications. Withall, the quality and kind of the materials used in its construction is of as high grade as was used in any similar building erected at that time.

The building is located on the southwest corner of Webster Avenue and Lincoln Parkway, west, faces Lincoln Park and is but a short distance from Lake Michigan. The surroundings and the outlook from the building are as attractive as any location in that city. The structure is fifteen stories high above grade, with a basement story. The building fronts 120 ft. on Lincoln Parkway west, and 128 ft. on Webster Avenue.

The exterior is designed in Italian Renaissance style. A pink granite base about 4 ft. high is on the two street fronts above which the walls are finished in terra cotta to the fourth floor line. The spandrels of the end halls are made of terra cotta panels and the walls from the fourteenth floor line to the top are faced with the same material. The texture of the terra cotta is rough, of soft grey color with slight shade of pink. The balance of the walls is faced with brick with terra cotta window sills and caps.

The details are refined but always sufficiently bold for their location. The building has a structural steel frame with combination hollow tile and concrete floor construction. The foundations are concrete caissons from 4 ft. to 6 ft. in diameter with enlarged bottoms, where they rest on a layer of hard pan about 20 ft. thick. Hardpan in this locality is about 45 ft. below datum and about 62 ft. below the average grade of the ground. Rock in this locality is 95 ft. below datum. The caissons were of the open well type and practically dry throughout their entire depth.

The main entrance is on Lincoln Parkway west, an entrance from Webster Avenue gives access to the dining room and the service entrance are on the alley. The main entrance vestibule is designed in early Italian Renaissance with the Moorish influence which was prevalent at that time. The walls are finished in marble and terra cotta and the ceiling ornamented with heavy plaster relief work, finished in vivid colors. The lobby is 68 ft. by 65 ft. in size with a skylight over about one-half of its area. This is designed in a later Italian period. The colors are soft and light, using the old Venetian blues, yellows and reds. The ornament is characteristic of this period with a slight influence of French. Adjoining the lobby, on the east, is the ladies' parlor and retiring room. The offices and newsstand are on the south of the lobby.

THE INTERIOR TREATMENT

The dining room occupies about one-fourth of the first floor in the northeast corner of the building, and is four steps above the level of the lobby. This room is designed in an English Colonial style with an influence of Heppelwhite, the ornamentation being very delicate, paneled columns, soffits and ceilings. The scheme of color is an old ivory white, relieved in very delicate tones of different shades of blue, with very little other color being used. The same scheme is carried out in the musicians' gallery and ladies' writing room on the mezzanine floor, both overlooking the dining room. The kitchen adjoins the dining room and covers a little less than one-third the total floor area. The completeness and convenience of the layout is indicated by the plan. Receiving and service rooms occupy about one-eighth of the floor area in the southwest corner.

A mezzanine floor over the kitchen, receiving and service rooms, contains the ladies' writing room,

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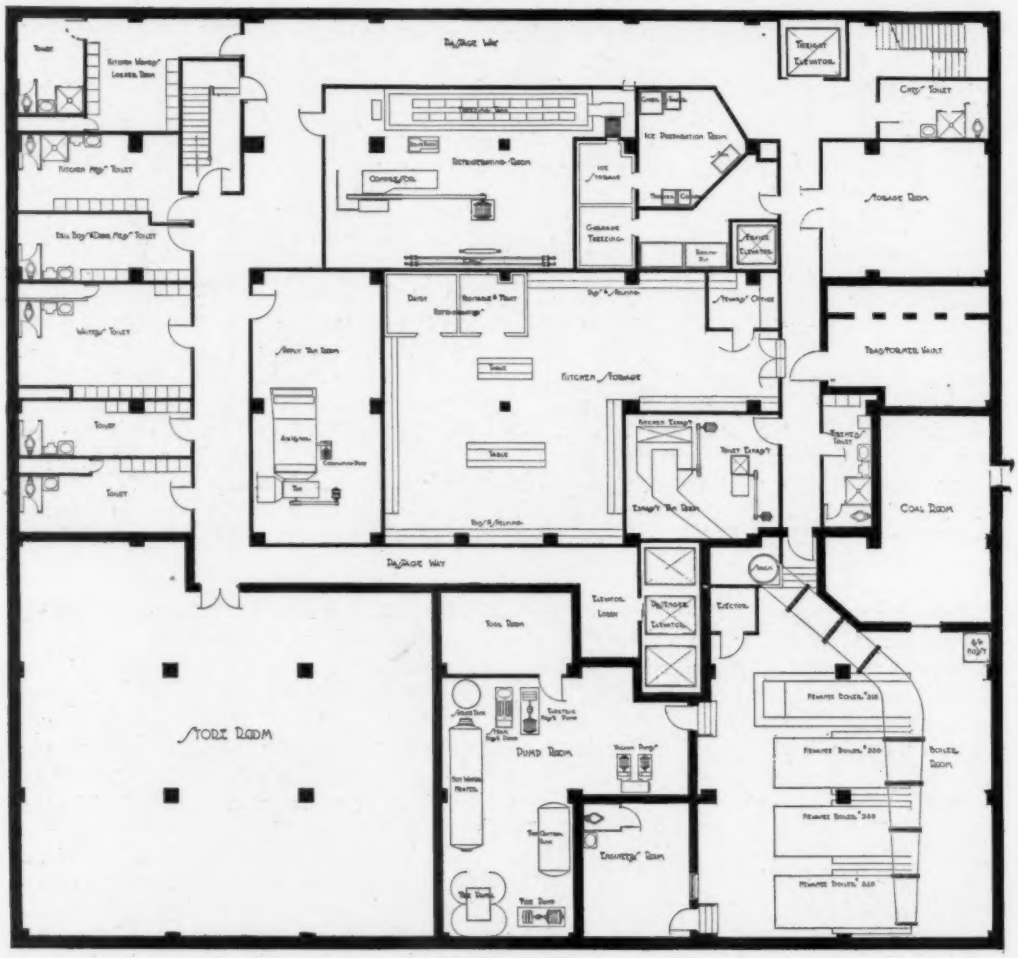
musicians' gallery, card room, tea room, barber shop, maids' and children's dining room.

The basement contains the boiler and fuel rooms, pump and refrigerating rooms, storage, toilet and locker rooms for the employees. Steam is used for heating the kitchen and hot water service. The machinery is operated by electric power furnished from the outside.

The typical room floors each contain 20 bedrooms with bath and large clothes closet and 10 living rooms with large closet opening into the entrance vestibule. The plan is so arranged that a number of bedrooms can be used in connection with a living room. The living rooms average 18 ft. by 20 ft. in size and the bedrooms 15 ft. by 18 ft. Two enclosed stairways and two fire escapes serve as means of egress. On the top floor is located the hall room 45 ft. by 75 ft. in size. Adjoining the hall room is a service room, storage room, check and retiring rooms for both men and women. This floor also contains a trunk storage room, valet department, linen room and other service facilities.

Elevator Equipment

The building is served by three high-speed passenger elevators, one of which serves the basement; a freight elevator traveling from basement to top story, and a service elevator from first floor to all upper floors. This service elevator is used for room service only. In the installation of these elevators an unusual combination of motors was made and the working results have been most satisfactory. In the electrical equipment of these elevators, advantage



BASEMENT PLAN

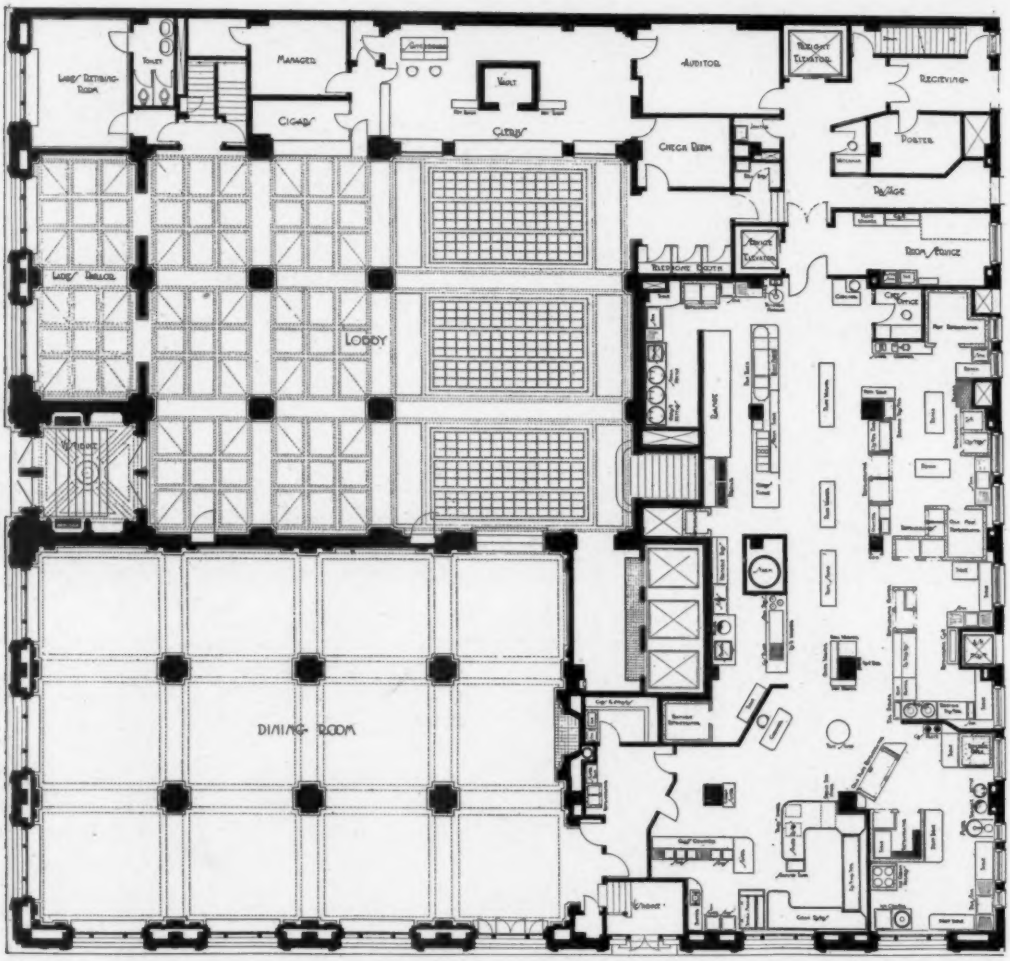
DINING ROOM

LOBBY

HOTEL WEBSTER, CHICAGO.

FRIDSTEIN & CO., *ENGINEERS*

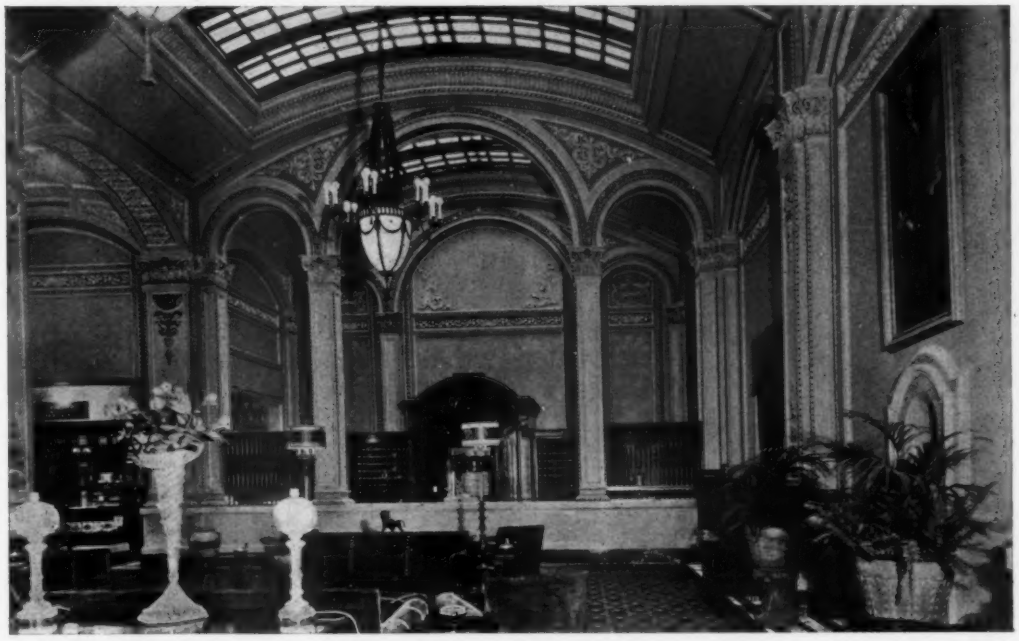
was taken of the fact that an induction motor driven above its synchronous speed acts as an induction generator and furnishes power to the line to which it is connected, when driven at such over speed. Advantage has been taken of this characteristic in facilitating smooth and efficient operation of high speed elevators.



MAIN FLOOR PLAN

Such motor equipment consists of two induction motors, either rigidly coupled together or having both motors mounted on the same shaft. The main driving motor is of the slip ring type, variable speed, and the second motor is of the high resistance motor squirrel cage type. The horsepower ratings and speeds of the two motors are determined by the application. In starting, after the brakes are released, the automatic control connects both motors to the line, with proper resistance inserted in the circuit of the slip ring motor, and also, in order to limit the torque, the current inrush, and to increase the slip, resistance is connected in series with the main leads of the squirrel cage motor. As the set speeds up, the squirrel cage motor is disconnected from the line when the set is operating at a speed of approximately the synchronous r. p. m. of the squirrel cage motor. At the same time, in a series of steps, the balance of the secondary resistance is cut out in the motor circuit of the slip ring motor, thus allowing the elevator to travel at the desired high speed.

When stopping, the reverse operation takes place; the whole amount of the secondary resistance is inserted in the circuit of the slip ring motor and the squirrel cage motor is again connected with the line



LOBBY, LOOKING SOUTH

DINING ROOM, LOOKING EAST

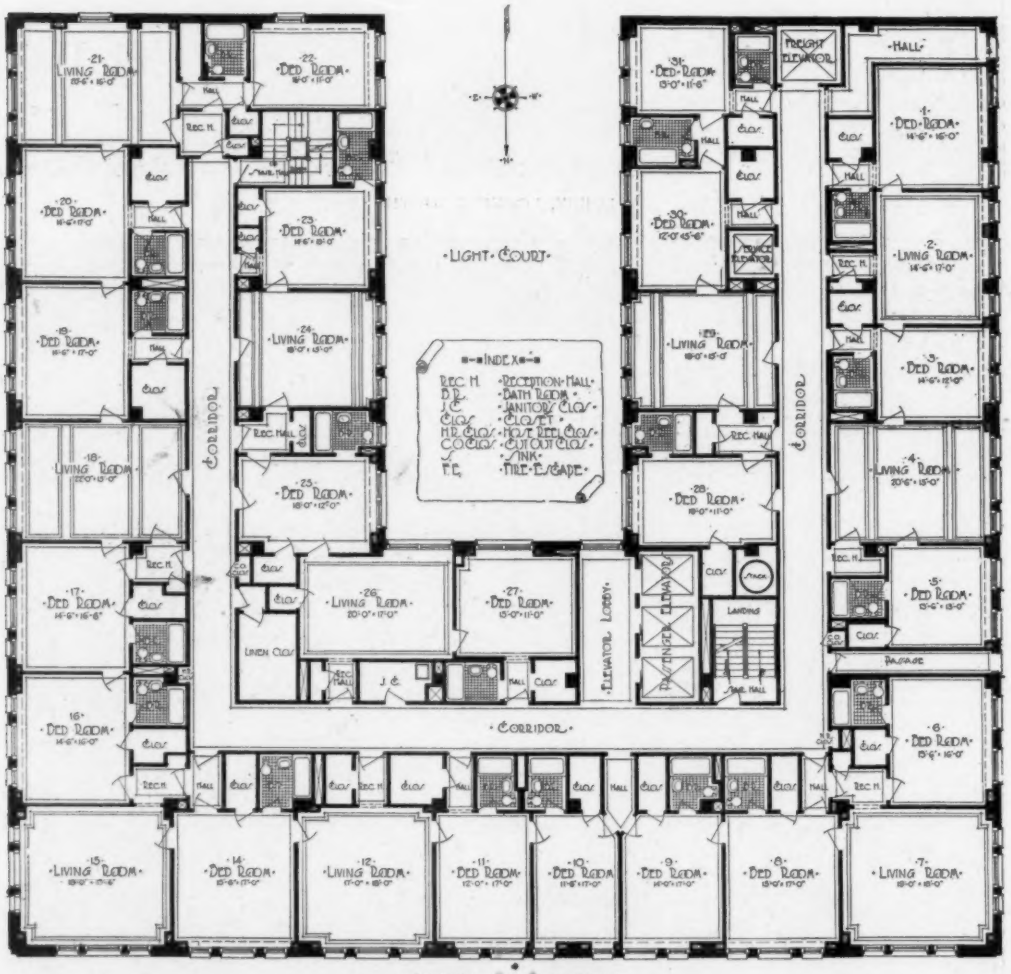
HOTEL WEBSTER, CHICAGO, ILL.

FRIDSTEIN & CO., *ENGINEERS*

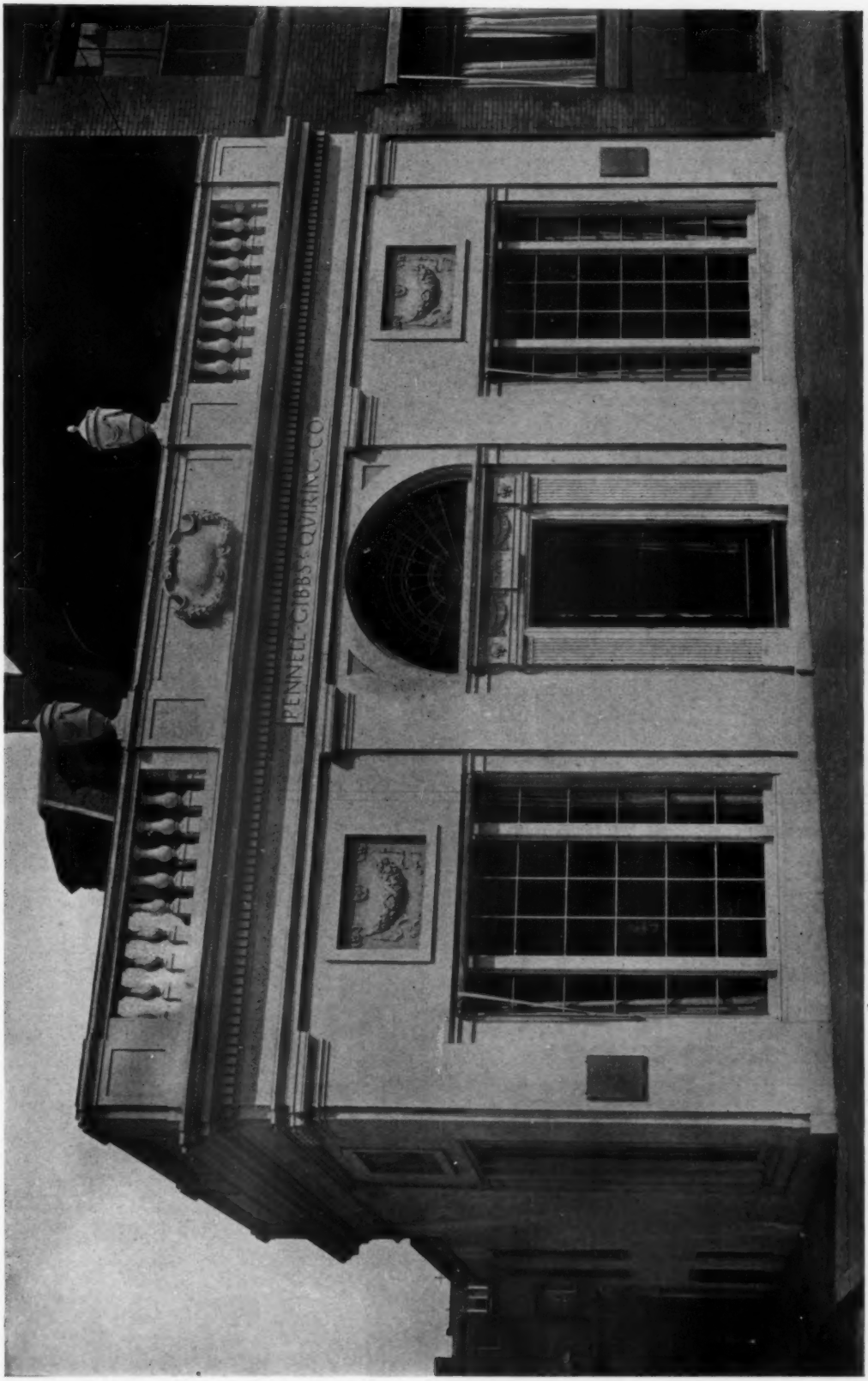
at which time it acts as an induction generator, transferring some of the kinetic energy of the elevator back into electrical energy, which in turn tends to slow down the set until the same has obtained a speed corresponding to the synchronous r. p. m. of the squirrel cage motor. The next operation disconnects both motors from the line and applies first one and then the other brakes.

A recently invented indicator is also installed in each of the passenger elevators. The floor push button signals indicate by the usual red or white lights opposite the floor number. On the same frame is installed two dials on which each floor number is indicated. A single hand or pointer moves as the corresponding other elevator car travels and indicates its exact location. The operator in one car can locate each of the other cars and its direction of travel. Any number of dials can be installed in each car to correspond with the number of elevators in the battery. Where elevator starters are not employed and especially for the intermittent service characteristic of apartment hotels, these indicators save in car travel by indicating to each operator which car had best serve the floor call.

Every feature of construction and equipment that would lessen the maintenance and operation costs has been incorporated in this building. The building was erected by G. H. Gottschalk & Company.



TYPICAL FLOOR PLAN



STORE BUILDING FOR PENNELL, GIBBS & QUIRING CO., BOSTON, MASS.
H. B. PENNELL, *ARCHITECT*

Architectural Quicksands

By CLINTON H. BLAKE, JR., *of the New York and Federal Bars*

THE preparation and adoption by the profession and by the various Master Builders' associations of the Standard Documents of the American Institute of Architects marked a great advance along the line of placing the dealings of the architect, owner and contractor on a definite and, so far as possible, standardized basis. The standard form of agreement between the contractor and the owner is admirable in many ways. It manifestly cannot be employed, in every case, without alteration, and the architect must use proper discretion in adapting it to the needs of the work in hand. There are various provisions in the standard form which the architect should consider with more than special care, and a word concerning these may be in order.

In referring to the agreement between the contractor and owner I have reference, of course, to the complete agreement, viz., the agreement proper and the general conditions, specifications and drawings as well.

Article 3 of the form of agreement proper, as distinguished from the general conditions, provides that the agreement, on the part of the owner to pay the contractor, is subject to "additions and deductions as provided in the general conditions." The wording of the above phrase might with advantage, it seems to me, be made somewhat broader. The agreement of the owner is subject not only to these conditions and deductions, but is subject, and should rightly in every case be subject, to the performance by the contractor of all the substantial conditions specified. It would seem that it would be advisable, therefore, especially if there be any question of the standing of the contractor employed, to amplify the phrase quoted so as to read, in substance, that the agreement of the owner to pay is "subject to the conditions and deductions provided in, *and to the performance by the contractor of all of the terms of,* the general conditions of the contract."

Coming now to the general conditions of the contract proper, sub-division k of Article I provides that the law of the place of building shall govern the construction of the contract, and by Article 45 the same plan is adopted, with respect to the arbitration scheme provided for, and it is specified that the arbitration procedure shall conform to the laws of the state in which the work lies. In many cases, especially where the owner and the contractor are residents of the same state and where the work is done within that state, there would be no objection to the clause as set forth in the general conditions. If the work is to be done, however, in some other state the owner and the architect, and for that matter the builder as well, should give careful consideration to the matter before agreeing that the laws of a different state shall govern their dealings and determine their obligations. They should at the least, before entering into any such agreement, find out just what these laws may be, how broad they may be with respect to liens and the like, and how they may affect the dealings of the parties.

In Article 5, relating to shop drawings, it is provided that the approval by the architect "shall not relieve the contractor from responsibility for deviations from drawings or specifications unless he has in writing called the architect's attention to such deviations at the time of submission." This provision is dangerous in the sense that the implication from it clearly is that, if the contractor has called the architect's attention to deviations from the drawings and specifications, the contractor will not be responsible therefor. We have already seen that the architect, in the absence of special authority, has not power to authorize any changes in the plans or specifications or any deviations from the work as therein set forth and laid out.

Article 24 of the Standard Documents, it is true, provides that no change (other than as provided in Articles 9 and 18) shall be made, unless in pursuance of a written order from the owner, signed or countersigned by the architect, and that no claim for an extra over the contract amount shall be valid unless so ordered. This provision is quite in line with the legal rule to which I have above referred. It is in line, also, with the various cases which have already been discussed in the earlier articles of this series, to the effect that the owner cannot be bound by changes in the plans and specifications authorized by the architect, but not approved or authorized by the owner.

It would be well it seems to me, if the wording of Article 5 were so altered, therefore, as to avoid any misleading interpretation thereof, either on the part of the contractor or on the part of the owner. The owner and contractor have, of course, the right to provide, by the terms of the contract, that the architect may make such changes and authorize such deviations from the drawings and specifications. The general legal rule quoted would not apply, if the contract were drawn so as to give this specific and special authority to the architect. The Standard Documents, however, do not do this and, as pointed out, Article 24 is quite specific in its statement of a contrary intent and understanding.

INTERIOR VIEW IN STORE OF PENNELL, GIBBS & QUIRING CO., BOSTON.
H. B. PENNELL, *ARCHITECT*

Article 7 refers to the ownership of drawings and models. It provides that all models are to be the property of the owner and that all drawings and specifications and copies thereof, furnished by the architect, are to be the property of the latter. This clause, excellent, so far as it goes, must not be assumed to fully protect the architect, for it does not, as it does not go far enough. It recognizes the necessity of a special agreement if the plans are to remain the property of the architect. Its weakness lies in the fact that it is a term of a contract, which is entered into between the owner and the contractor, and to which the architect is not a party. The question of the ownership of plans lies, primarily, between the architect and his client. If the architect is to be properly protected on this point there should be an agreement between him and the client, direct, covering the ownership of the plans and specifications.

There is no objection to Article 7 and it is probably advisable that it should be included, so that the question of the ownership of the plans may be clear as between the owner and the builder. The architect should realize, however, that the agreement between these two does not adequately protect him and that, if his right in the plans is to be properly covered, it should be provided for in the agreement between him and his client.

Articles 9 and 10 have to do with the status of the architect and the general scope of his authority. Whether they be approved in the standard form, or disapproved, depends upon the personal point of view of the party entering into the contract, and upon the conception which one may have of the proper scope and character of the duties of the architect of today. The effect of these provisions and of Article 45, which should be read in conjunction therewith, is, undeniably, to cut down the discretionary activities of the architect to a minimum, and to leave all possible questions open for adjustment at arbitration. One good result of this course is that it may lessen, somewhat, the danger of an architect exceeding his authority and incurring liability to the owner, or to the contractor, as a result. Personally, however—and this is purely a personal feeling—I question whether the curtailment of the authority of the architect, as this authority is curtailed by the Articles above referred to, is in the best interests of the profession and its work, or in the best interests of the client.

It has long been customary to provide in the building contract that the architect, in substance, shall have full charge of the work of supervision and that all questions relating to the interpretation of the plans and specifications, and the like, shall be referred to and decided by him. All that the Standard Document form does is to provide that he shall have personal supervision and direction of the work. The clause does not amplify this statement in any way and the general effect of the wording of Articles 9 and 10 is, certainly, to lessen the usual authority of the architect, in that the various provisions customarily used, in amplification of the phrase that he shall generally direct and supervise the work, are lacking.

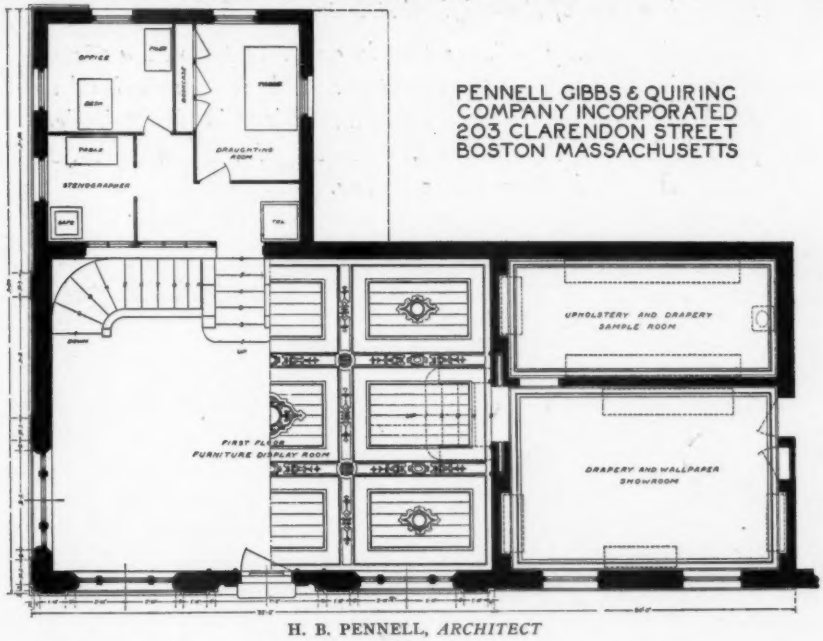
It is of prime importance that the architect should not have the idea that he has authority to act for the owner on any point which may arise. Cautions on this point I have emphasized throughout these articles; it was one of the points upon which I urged special caution some years ago in my "The Law of Architecture and Building," and I have not changed my feeling in the slightest. I heartily approve, therefore, the purpose which underlay, I take it, the framing of Articles 9 and 10, viz.: the desire to make clear the fact that the architect has not a blanket authority and that any special authority, to be properly exercised by him, must be properly and specifically granted.

It seems to me that there should be, and that there is, however, a desirable middle course, between the failure to point out the limitations of the architect's status and the narrow construction of his authority as given in the Standard Documents. I cannot help feeling that the work turned out by the profession will be benefited, that the rights of the ordinary client will be better cared for and safeguarded, and that a more satisfactory job will be assured him, if the architect be given, under the contract, a much more general power as arbitrator, than that provided for, or contemplated by, the Standard Documents.

While believing thoroughly in the settlement of disputes by arbitration, rather than by resort to the courts, I yet feel that it is a mistake to leave too many details open for decision by arbitration. Any arbitration, at the best, involves time, delay and expense. It is, unquestionably, desirable that questions which should not be decided by the architect and which may lead to controversy between owner and contractor, should be settled by arbitration, between the latter two, if and when they arise. It is, I feel, equally desirable that as many points as possible should be settled and settled definitely, under the contract, by the architect, whose training and professional qualifications equip him, especially, to deal with them and to decide them with fairness to both parties.

I therefore favor, personally, a moderate modification of Articles 9 and 10 and of Article 24 also, in so far as the latter is related to them, so that they may specifically grant to the architect the right to decide questions involving the interpretation of the plans and specifications, and disputes between the owner and contractor, which naturally fall within the classification of points which an architect, by his

(Concluded on page 396)



PENNELL GIBBS & QUIRING
COMPANY INCORPORATED
203 CLARENDON STREET
BOSTON MASSACHUSETTS

H. B. PENNELL, *ARCHITECT*

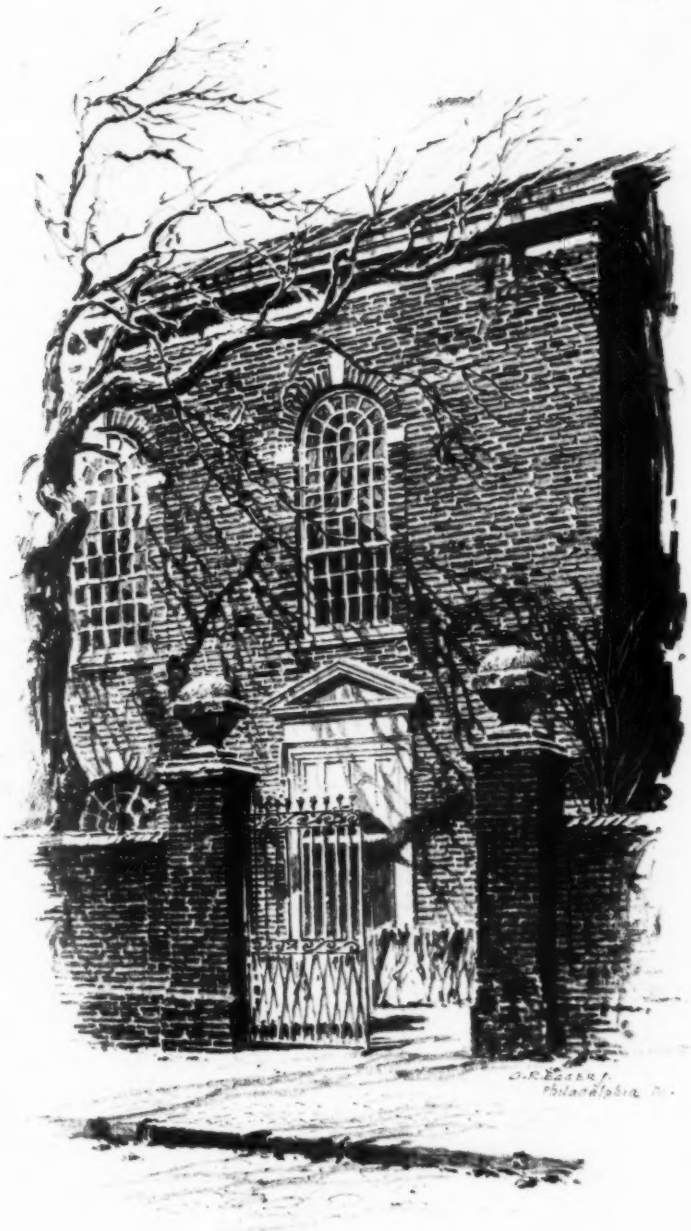
St. Peter's Church, Philadelphia, Pa.

(See reproduction of original drawing by O. R. Eggers on opposite page)

St. Peter's Church was built in 1758 and is very similar in its treatment to Christ Church. It is one of the few early Colonial churches in Philadelphia which does not follow the Wrenn type. In the end of this church there is a palladian window similar in design to that shown in Christ Church and there are a number of similarities in the two structures.

The upper part of the square tower of this church, with its slender octagonal spire, telescoping behind the battlemented roof, was added to the original church in 1742 by William Strickland. The detail shown in Mr. Eggers' sketch is a part of the original structure.

It is interesting to learn that in order to provide a means of raising the money to erect the steeple it was decided to hold a lottery. This lottery was advertised in the Philadelphia journals. Thirteen men were appointed managers, of whom Benjamin Franklin was one.



ST. PETER'S CHURCH, PHILADELPHIA, PA.
THE AMERICAN ARCHITECT Series of Early American Architecture

EDITORIAL

To Relieve Traffic Congestion in New York

ARNOLD W. BRUNNER, architect, and president of the Federation of Fine Arts, in an address recently made before that body, predicted that the New York City of the future will have its activities on the second floor instead of on the present street level.

This prediction was made during a discussion as to the ways and means of eliminating present congestion and providing for the future growth of the city. The view as advanced by Mr. Brunner is shared by the majority of those who have carefully studied traffic problems in this city.

This concentration of the building's principal activities on the second floor will directly result, if the proposed construction of elevated streets becomes a fact. The street levels would then be occupied by slow moving business traffic, while the upper levels would serve for the quicker moving and pedestrian traffic. The development of the second story would then logically occur. The ground floor of all buildings would be devoted to public passageways, parking spaces for motor cars and delivery entrances for merchandise to the buildings.

"There need be no fear," Mr. Brunner stated, "that these changes which must come will lessen the city's beauty." In fact he believes that if the people take the counsel of their architects and live up to the ideals that have already been outlined, we shall be able to remodel our streets and the buildings on them in a most satisfactory and artistic manner.

Elevated roadways in New York will, if present plans are carried forward, soon be built. A further extension of the plan for traffic relief is the construction of subterranean passages through the city to which all traffic that does not properly belong on the city's streets will be diverted.

These features are not the fancies of visionaries, but well matured plans of a practical nature to insure the city's welfare.

Contractors Adopt a Code of Ethics

ARCHITECTS should seriously view the efforts of contractors in formulating and adopting a code of ethics. It indicates that contractors very thoroughly appreciate their responsibilities in the production of an honest building. It is an effort on the part of contractors to prove their sincerity and a very strong intention to purge themselves of dishonest members.

The proposed code of ethics set forth in the report of a committee of the Associated General Contractors is one that has all the dignity and forcefulness of a professional statement. This report may with profit be read by our own organizations. It contains germs that will suggest some desirable amendments.

The premise of this proposed code as set forth by the committee is that as the construction industry vitally affects the well being, comfort and safety of the public in its home life and daily vocations, this fact entails on contractors a responsibility that is of a professional character.

This is undoubtedly true and therefore justifies the Associated General Contractors in their efforts to regulate their work along professional lines.

The motto of this association is Skill, Industry and Responsibility. No professional organization, ruled by the strictest code of ethics, may have higher ideals than those expressed in this motto. The contractors are quite right. A code of ethics properly enforced will place the Association more justly before the people and prove their contention as to the great importance of their work.

Architectural Quicksands

(*Continued from page 392*)

technical education and training, is specially equipped to handle and to decide.

If the architect act in bad faith, then, of course, the contractor should have the right to go behind his decision. Admitting, however, that the architect employed is a thoroughly competent and high class man, I can see nothing to be gained and much to be lost by making the arbitration provisions so sweeping as to, in effect, make all of the important decisions of the architect subject to review by a Board of Arbitrators. The competent architect is certainly as well qualified to pass upon these questions, as the arbitrators whose appointment is contemplated under the Standard Documents.

To allow appeals to the arbitrators to be taken broadcast, wherever the contractor is dissatisfied with the decision of the architect, necessarily lengthens the time of uncertainty and of final determination, and to a considerable extent must inevitably weaken the authority and power of the architect. I doubt if this is a desirable result. Assuming that the architect be given a broader authority and broader powers of determination than those contemplated by the Standard Documents, it is, of course, of prime importance that at the same time, the contract be so worded as to protect the architect in his exercise of the powers and authority so granted. In other words, while it is desirable, as I see it, to strengthen the position of the architect, as the man best qualified to pass upon matters in dispute, and to eliminate unnecessary controversy by making his decision final, in so far as that be possible, yet the architect must be so safeguarded, that in exercising these powers and this authority, he will not subject himself to any personal liability to the owner or to the contractor.

His position must be, in a word, akin to that of a judicial officer. That his action as an arbitrator may be essentially in the nature of a judicial act, I have already pointed out, and have referred to the fact that it has been legally recognized that such is the case.

Recent provisions of the New York law have greatly strengthened the effect of the decisions of arbitrators, and have given them a recognized force and binding effect which, before the change in the statute, they did not have. This marks a distinct advance in the desirable tendency to dispose of disputes by arbitration, rather than by long drawn out and expensive legal procedure. Unquestionably, it may be desirable to leave some of the more important and fundamental issues between the contractor and the owner open to arbitration and the change in the New York statute will facilitate the carrying out of this purpose. The idea of arbitration, as proposed in the Standard Documents, is good, but its extension beyond a certain point will not, I believe, prove to be in the best interests of the owner or the architect.

It is undoubtedly true that the arbitration policy laid down in the Standard Documents tends to favor the contractor, in that it allows him to appeal, on so many points, from the decisions of the architect. Given a conscientious and highclass architect, however, I doubt if the contractor will be any the worse off if his rights are settled directly by the architect, without further arbitration or appeal, other than such right of appeal to the courts, as he may have under well recognized rules of law. It has been my experience that the decision of the architect, in questions involving the interests of the owner and contractor alike, favor the contractor quite as often as they do the owner. In fact, I know of many instances where the architect has deliberately sacrificed the good will of his client, in order to be fair to the contractor and to protect the latter on some point in which he has been right and the owner has been wrong.

Article 28 gives the right to the contractor to act in emergencies in cases *not considered by him* as coming within the provisions of Article 17. This provision, as it is worded, is dangerous, in that it in effect leaves it to the contractor to determine whether an emergency case comes within the provisions of Article 17 or not. Under paragraph 18, if the contractor considers that the case does not fall within the scope of Article 17, he apparently can proceed under Article 18. It would be much preferable and safer, if the clause in Article 18 "not considered by the contractor as within the provisions of Article 17" were omitted entirely, and the article so amended, as to provide that, in emergencies of the class indicated not coming within the scope of Article 17, the contractor may act without special instruction or authorization. This would make it simply a question of fact as to whether the emergency were such as is contemplated by Article 18 or should have been classified under Article 17.

The lessening of the scope of the contractor's discretion on this point has one weakness, in that it unquestionably would tend to make the architect loath to assume responsibility in an emergency, where it might be important that he should do so and that he should act promptly. As between this danger, however, and the danger of giving the contractor the extremely broad discretionary power contemplated by Article 18, I should think that a middle course might easily and with advantage to all concerned be worked out, on a basis of a more exact definition of emergencies, and at the same time the elimination of the objectionable phrase which leaves the decision so entirely in the hands of the contractor.

(*To be continued*)

Architectural Management—Part I

By Francis B. Ellis
Architect with Bethlehem Shipbuilding Corporation

THERE are two very important facts that are tending seriously to overthrow architecture as a necessary profession in the business of building construction. First, there is the utter lack of knowledge among laymen of the duties and functions of an architect. Second, there is a certain snobbish disregard for good, systematic, up-to-date business methods among architects themselves. To correct the first condition is a matter which must be taken up with the laymen, and should be the duty of the various architectural organizations—it is a serious problem, but it can be solved with the aid of public propaganda. The correction of the second condition, however, is a matter within the profession.

A man high up in the management of one of the big engineering corporations said to me that his organization was going to control all the architecture in that particular city. And that particular city was one of the biggest and most cultured on our Eastern Coast! I worked with that big corporation for over a year in their architectural department, and, say what you will, that corporation bids well to make good, in part at least, that boast. That corporation, together with other similar organizations, is employing steadily, at better salaries than they can obtain elsewhere, some of our best architectural draftsmen. Architecture with them, to be sure is not architecture, but it is a dangerous substitute, in that it has its appeal to the business man. And if we are going to turn up our noses at the business man and his point of view, then we are the snobs that so many architects are, and, as far as I can see, are beyond all recall.

What are we going to do? This is a big, serious question. There are some things that we can do now, there are others that we cannot do before a more careful investigation, and there are some perhaps that we can do nothing about. For the last six or seven years I have studied conditions in drafting rooms with some of our largest corporations and with our Government, and have arrived at certain conclusions which have a bearing on the above—and which I desire to set forth.

We all know that the words, "efficiency," "order," "system," "organization," "business," and other equally cold, hard words do not mix easily with such words as "art," "aesthetic," "beauty," and such warm, humanly sympathetic soft words. The true architect of today, however, is a skilful chemist, and can mix those very words, and mix them in their right proportions. Too much of one and not enough of the other, however, will spoil the mixture. And unless you are just that sort of an architect, with just that knowledge of that sort of chemistry, you cannot hope to get much of Mr. Business Man's work to do. Remember that you must be able to command Mr. Business Man's respect on the lines of business methods, for to be an architect implies an ability to advise on business points.

I desire to outline simple architectural organization which I feel sure is the best way to start the reformation of our methods. This outlined organization can be expanded or modified to fit the business, but, I am certain that there is much more chance for long life and solid everlasting success, in a big strong organization than in a smaller one and I would therefore favor as large and powerful an organization as is within reason. Your business will sometimes be large and sometimes be small, and therefore you must have a "Telescopic" feature—that is a detail which you can work out for yourself.

YOUR organization must be made up of a head and of various departments. The function of the head is to direct, to command. The functions of the various departments are twofold—to advise the head through the department heads, and to produce the various work assigned the architect.

You have all heard tell of that famed sea captain who was constantly thinking of the comforts of his crew. We architects are just like that good man, and just as ridiculous in the eyes of others as he was to us. It is true that our draftsmen are architects-in-the-making, but for goodness sake, let them see that this is a business world that they are entering and that they must put up with some unfortunate discomforts because of that. "Nine to Five" may be all right for office hours, in fact, I favor rather short hours for the drafting room—but those hours must be kept—strictly kept! And during those hours every man must work for the best interests of the firm—and work hard and earnestly. I favor short hours for the drafting room for the reason that it is hard, confining, arduous work, but I feel that it is not unreasonable to request honest measure in time and work. I do not favor slave-driving methods, nor do I favor a spy system; in fact, I favor the honor system; the poor workman and the slacker are easy to pick out. Take your men into your confidence, show them what you are doing and why you are doing it; remember that they are young architects and that you owe them as

much open minded, broad, democratic, freedom as you are able to give—but show them that yours is a business and not a charitable organization. There is a certain spirit which you and your men must all have in common, a clear understanding at all times, and the morale of your organization need cause you no trouble.

Here follows an outline of the organization as I see it:

A. HEAD: Architect.

X.

DEPARTMENT OF DESIGN:

1. Division of Architectural Design.
2. Division of Structural Design.
3. Division of Material Design & Specifications.
4. Division of Mechanical & Service Design.

Y.

DEPARTMENT OF DRAFTING.
(Same divisions as above).

Z.

DEPARTMENT OF FIELD INSPECTION.
(Similar divisions as above).

The Head—the Architect

There must be a head to every organization—just as there must be a commander to every ship. It must be a one-man head—one to act as the final responsible director. This is a much more important point than it may at first appear, with the great argument in its favor that all government and business organizations agree on it. Of course, there may be partners, there may be equal partners as far as the profit sharing goes—but, from the operative end there must be one senior, president, director, or whatever you care to call this head. Remembering that this is an architectural firm that we are dealing with, its director must be an architect—a real architect in its broadest meaning. He must see clearly architecture from all points of view, not simply the aesthetic, the up-lift, the grandeur, the divine side of the thing, but he must see the worldly aspect, the mechanical aspect, the cold mathematical aspect. Architecture is a solving of problems, and each problem has its conditions; avoid a condition and you avoid the problem. This director must, however, know his own limits—he must not be a "know-it-all." There is no living man who can know-it-all in our great tremendously broad field. This director must have with him, at the head of each of their respective divisions, expert specialists. These men must be absolutely dependable, experienced experts—the sort of man in whom the director can place absolute faith and confidence—they must be able to take full responsibility, and this responsibility must be constantly given them.

Department of Design

The department of design must be directly and indirectly responsible for the origin of all schemes. The various divisions must work together at all times, there must be no silly jealousy, each individual designer must design as directed, giving in to each other as the conditions of the problem demand. In the design of a power house, for example, the most important demand is power production—it is clear, therefore, that the architectural designer will have to give over many of his pet ideas because of certain conditions that must exist under the charge of the mechanical designer. In one of the large corporations it is the custom to designate at the start of the job the most important consideration—for instance, the power house would be assigned as being a mechanical problem, and the mechanical division would be appointed the senior division.

The manager in charge of the design division must clearly see the importance of the various conditions of the problems, and understand the relative value of each—it will be his duty to direct accordingly. He, in turn, must not favor too strongly one division over another, his designers must be the best of their various callings, and must be given trust, backing and perfect freedom and confidence.

HOTEL WEBSTER, CHICAGO, ILL.
FRIDSTEIN & CO., *ENGINEERS*

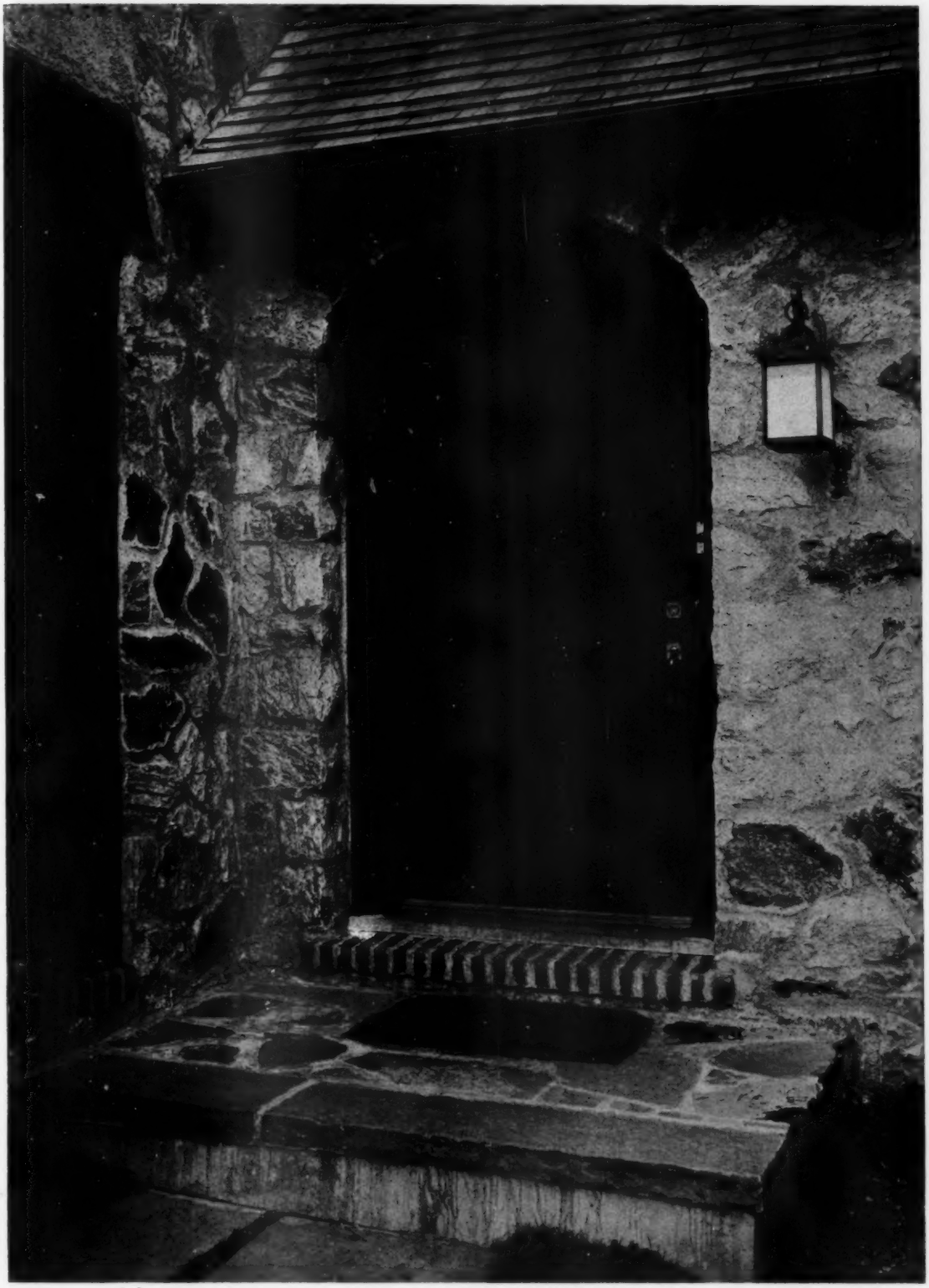
THE LOBBY, LOOKING EAST
HOTEL WEBSTER, CHICAGO
FRIDSTEIN & CO., *ENGINEERS*

LADIES' PARLOR
HOTEL WEBSTER, CHICAGO, ILL.
FRIDSTEIN & CO., *ENGINEERS*

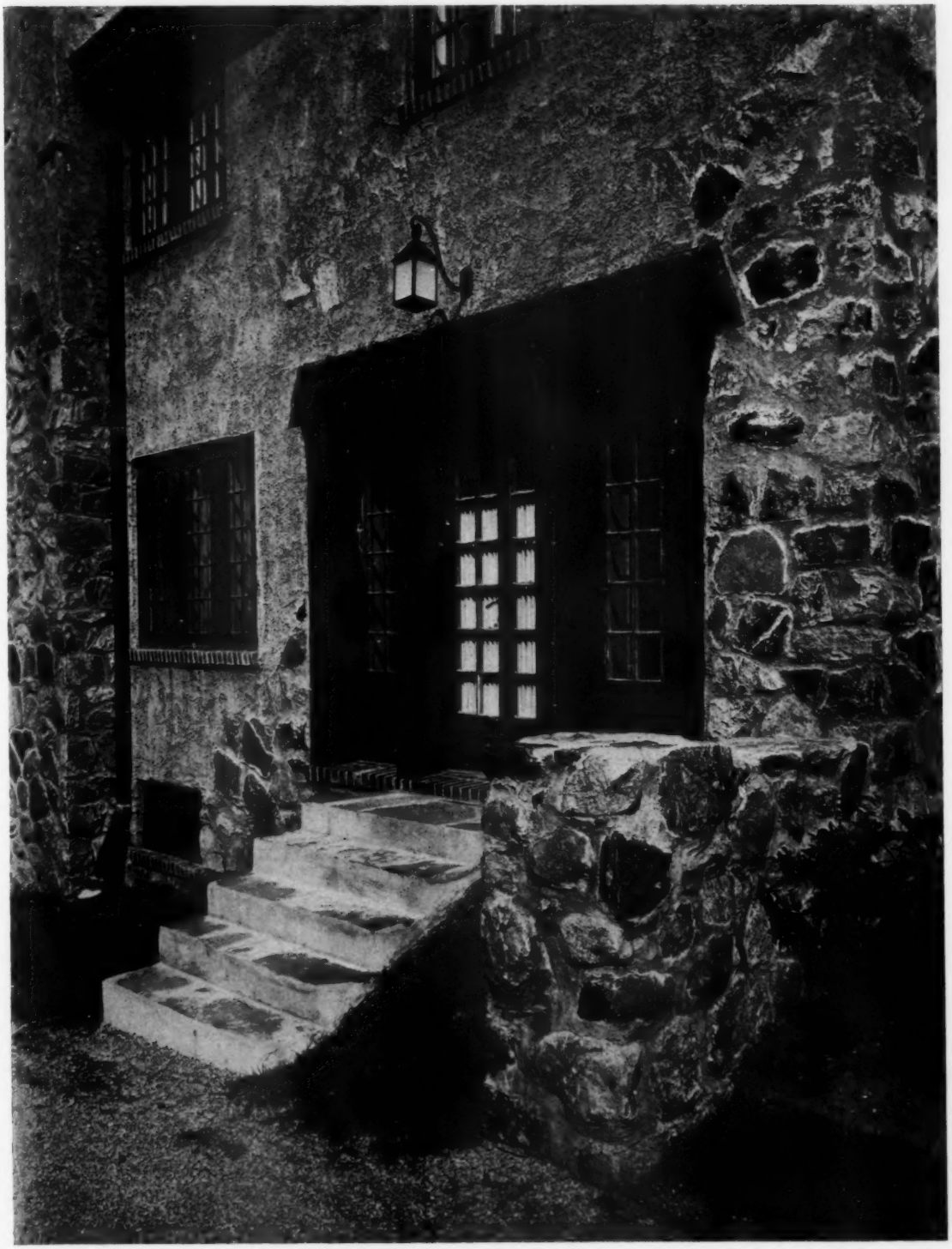
XUM

DINING ROOM
HOTEL WEBSTER, CHICAGO
FRIDSTEIN & CO., *ENGINEERS*

HOUSE OF CLARENCE McDANIEL, HARTSDALE, NEW YORK
JULIUS GREGORY, *ARCHITECT*



HOUSE OF CLARENCE McDANIEL, HARTSDALE, NEW YORK
JULIUS GREGORY, *ARCHITECT*



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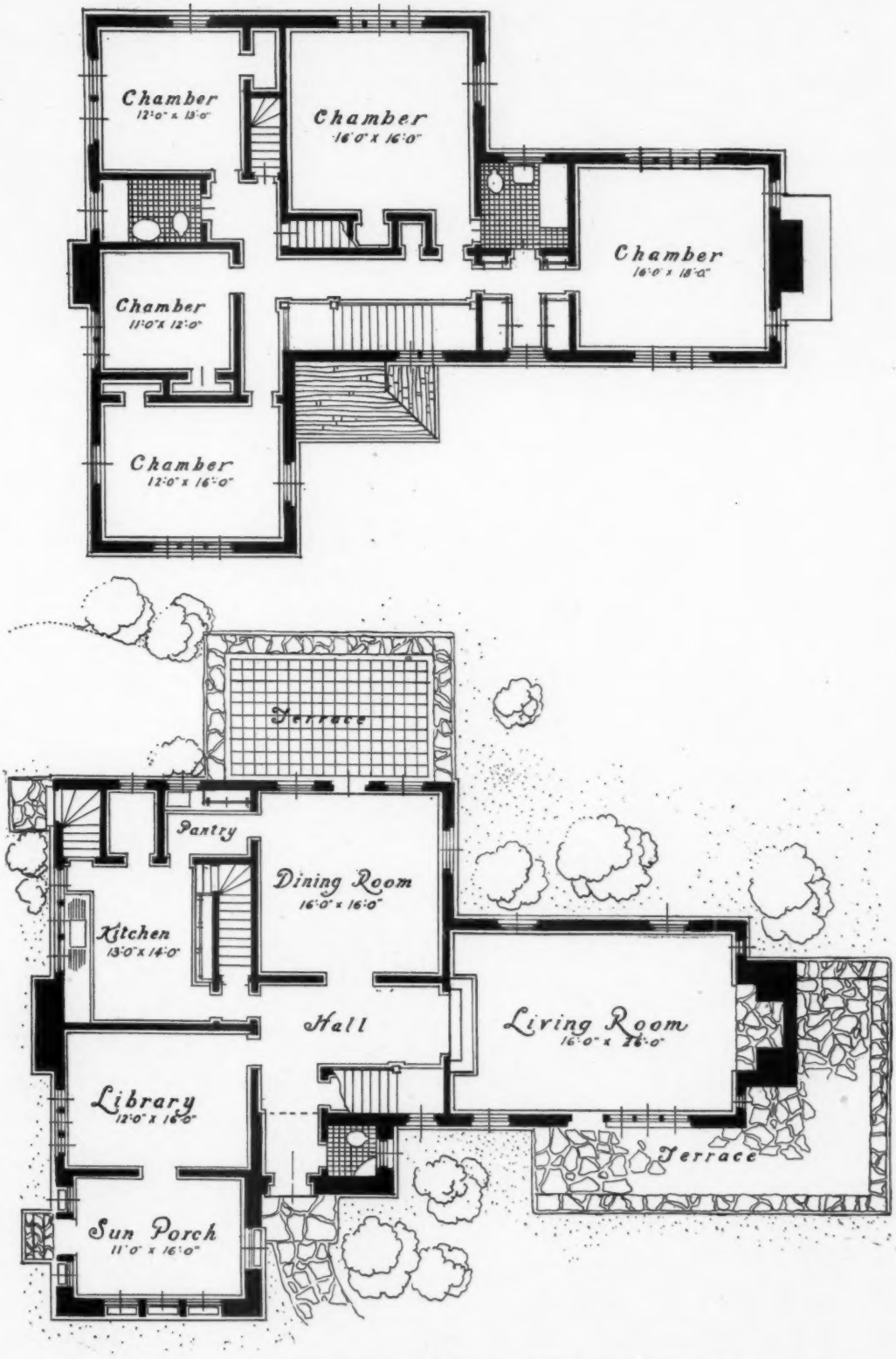
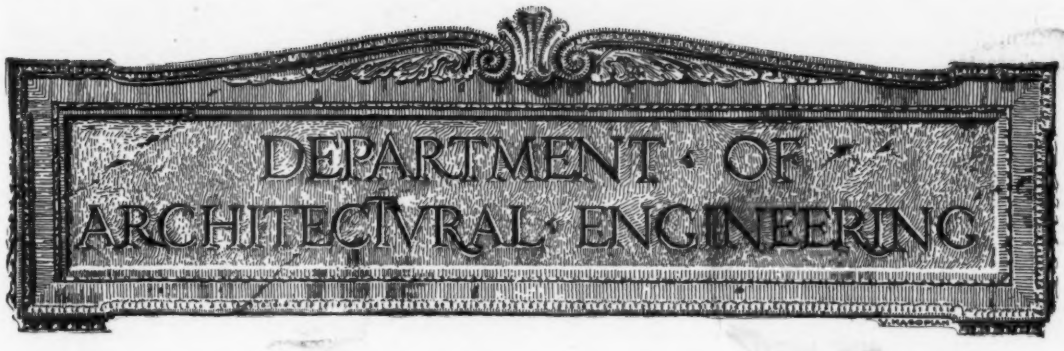
JULIUS GREGORY, *ARCHITECT*



HOUSE OF CLARENCE McDANIEL, HARTSDALE, NEW YORK
JULIUS GREGORY, *ARCHITECT*



Effect of Recent Investigations on the Design and Operation of Heating and Ventilating Equipment—Part II

By Charles L. Hubbard

HAVING described in the previous instalment of this article the method of testing the air of a room as regards ventilation, let us now see how the various constituents may be improved in case any of them fall below the required standard. In the problem just considered, the factor involving temperature, humidity and air motion was found to be only 92.8 per cent. of perfect, this condition being indicated by a difference of 4 deg. between the actual wet-bulb temperature (60 deg.) and the ideal (56 deg.) for the character of the work and the air movement. Assuming that no change can easily be made in the latter, it is evident that the wet-bulb temperature must be lowered, either by reducing the room temperature (dry-bulb) or the moisture content.

Suppose the room temperature was found to be 72 deg.; then for a corresponding wet-bulb temperature of 60 deg. we find the moisture content to be 0.612 lb. per 1,000 cu. ft. of air (see Table III, previous article), which gives a relative humidity of 50 per cent. for the given dry-bulb temperature (72 deg.). In order to keep practically the same quantity of moisture in the air and bring the wet-bulb down to 56 deg., the ideal sought, it will be necessary to reduce the room temperature to 62 deg., in which case we have, from Table III: dry-bulb, 62 deg.; wet-bulb, 56 deg.; moisture content, 0.611 lb. per 1,000 cu. ft. and relative humidity, 69 per cent.

If it is desired to keep the room temperature the same and vary the humidity, the same wet-bulb may be secured by reducing the moisture content to 0.428 lb. in 1,000 cu. ft. of air, in which case we have a dry-bulb temperature of 72 deg., wet-bulb 56 deg., and a relative humidity of 35 per cent. The most satisfactory combination for ordinary conditions would probably be secured by varying both the room temperature and the moisture content, so as to give approximately a dry-bulb temperature of 68 deg., wet-bulb 56 deg., moisture 0.506 lb. in 1,000 cu. ft., and relative humidity 47 per cent. If, for any reason, it was not desirable to change either the room temperature or the humidity, the ideal wet-bulb temperature might be raised to 60 deg. by increasing the air movement to 200 ft. per min. (see Table II), or, if this proved too high, conditions approaching the ideal might be secured by raising the velocity to 160 ft., which would give a wet-bulb temperature of 59 deg., without changing the other factors. A condition of this kind might occur in a room where a few of the occupants were sitting, while others were more actively engaged, in which case electric fans, so arranged as to increase the air movement over the latter group, might be all that would be necessary.

In a general way, the latest theory of ventilation requires nothing entirely new in the way of mechanical equipment, but rather a perfecting of that already in use and certain changes in the method of operation. The most important of the latter is that of recirculation or the returning of air to the fan from the inside of the building, either wholly or in part. This has a direct bearing upon the fuel question, as the heat required to raise the temperature of the incoming fresh air to that of the building is often

several times that required for heating purposes only, depending, of course, upon the outside temperature, the character of the building construction, and the relation between the number of occupants and the cubic space to be heated. In the average schoolroom, with a modern system of ventilation operated on the chemical theory of air dilution, nearly four times as much heat is required as would be necessary if the air was returned to the fan at approximately room temperature in zero weather. In shops and factories,

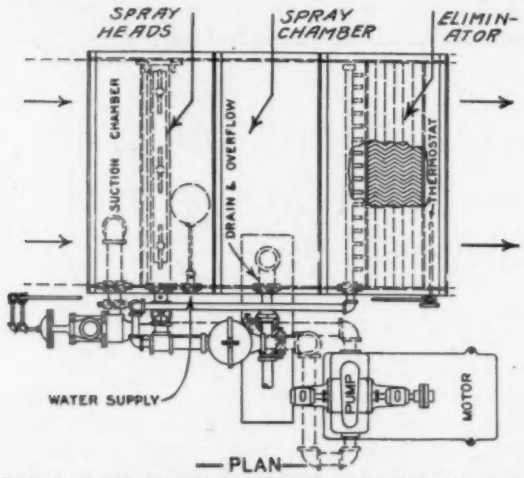


FIG. 8. DETAIL OF MACHINE ILLUSTRATED IN FIGURE

where the cubic space is much greater per occupant, the ratio between the heat required for ventilating and warming is much less, but it is probably safe to say that the heat requirements could be reduced at least one-half in the average case by re-circulating the air when the outside temperature approaches zero or when there is a high wind with a temperature ranging from 15 to 20 deg. above. If there is an abundance of exhaust steam which would otherwise be wasted, this would have no effect upon the fuel consumption, but in most manufacturing plants there are so many uses for the exhaust that live steam must be turned into the heating system more or less of the time during the winter season. This will, of course, vary widely in different cases, so that figures for general application have but little value. It is a simple matter, however, to make an estimate when the exact conditions of operation are known.

So far as the effect of re-circulated air upon the occupants is concerned, extended tests seem to show no harmful results from any diminution of oxygen or accumulation of carbon dioxide, this being taken care of by natural air leakage through the building construction. As a matter of fact, most plants operated on this system make a practice of taking in a certain amount of "make-up" air from outside, except in the coldest weather, especially where metal sash and concrete walls are used or the construction is such as to reduce natural leakage to a minimum. This practice naturally leads to the question, why supply *any* outside air if the chemical composition is of so little importance? This may be answered by saying that a certain small amount of fresh air *is* required for the purification of that expired from the lungs, as previously described. Furthermore, there are other conditions to be considered, such as fumes or dust given off by industrial processes, bacteria, odors, etc., which are sometimes best dealt with by air dilution in limited amounts. In the most modern plants, dilution for the above causes is either eliminated or reduced to a minimum by other means which will be described in some detail later on.

Let us now go back to the primary factors to be considered in "air conditioning" and see what equipment is necessary or available.

The first of these is temperature control, which, in view of its great importance, should, if possible, be automatic. The first objection to this is naturally the cost of installation. Automatic control does not necessarily mean more equipment or greater expense, but simply a readjustment of equipment for bringing about better results. It saves fuel by preventing loss of heat through open windows, which is an important item during the mild weather of spring and fall. Again, it is part of a general scheme for the reduction of boiler power where the volume of outside air can be reduced by re-circulation. Better air conditions and the resulting increase in efficiency on the part of the occupants are points never to be lost sight of. Systems for the automatic control of temperature have been in use for many years and have now reached a

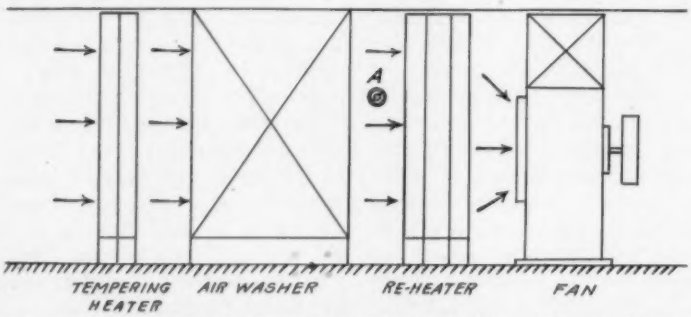


FIG. 9. DIAGRAM SHOWING ARRANGEMENT OF AIR WASHER IN RELATION TO THE FAN AND HEATERS

state of perfection that is very satisfactory.

The pneumatic type, which is generally employed for the ordinary heating and ventilating plant, consists of three essential parts, as shown in diagram in Fig. 1. First, a compressor, pressure tank and distributing pipes; second, thermostats placed in the rooms or spaces to be regulated; and, third, special pneumatic valves on the radiators, or diaphragm attachments at the mixing dampers. When the main plant makes use of compressed air for other purposes, the control system may be supplied from this source, provided the air is free from dirt, oil, and water and can be reduced to a pressure of 15 lb. per square inch; otherwise a special compressor should be employed. These are commonly electrically driven, although steam may be employed if the available pressure is above 20 lbs. In case neither electricity nor steam pressure is to be had, especially in small buildings, a hydraulic compressor, driven by water at city pressure may be employed. All compressors are automatic in action, being started and stopped by variations in pressure in the receiver or tank. Motor-driven machines are either belted, or driven by a worm gear, to secure the necessary reduction in speed. A thermostat is simply a device for opening a small valve and allowing compressed air to pass from the pressure tank to the radiator valve, or diaphragm operating a damper, when the temperature of the surrounding air becomes too high, and to exhaust the pressure when the temperature falls. Thermostats are usually designed to operate within a range of two degrees, that is, one above and one below the normal for which they are set. Motive power is produced by an expansion member, either of metal, vulcanite or a volatile liquid, which acts through changes in temperature. Pneumatic thermostats are of two general classes, the *positive* or quick-acting and the *intermediate* or graduated. The first of these is used in connection with steam and hot water heating, where the valves are to be fully opened or closed and quick action is desired, while the graduated type is employed for the operation of mixing or by-pass dampers. In this case the thermostat works slowly, and simply varies the air pressure in the diaphragm mechanism operating the damper, and so holds it in any intermediate position necessary to maintain the room temperature desired. *Insertion* thermostats are constructed with the expansion piece of such form that it may be inserted into an air duct or fan chamber while the moving parts and pipe connections are outside and easy of access.

Multiple thermostats are of the general type just described, but having the expansion piece connection with two, three, or four operative mechanisms which act at different temperatures. For example, in Fig. 4, a multiple insertion thermostat of three points is placed in the duct beyond the fan and connected with the heating coil as indicated. When the air temperature falls to 69 deg. section No. 1 opens. If it still continues to fall, No. 2 opens at 68 deg. and No. 3 at 67 deg., which gives the full power of the heater in combination with the hand-controlled section. A different arrangement is shown in Fig. 5, where a four-point thermostat in the fresh air duct controls the number of coil sections, according to the outside temperature, and holds the air temperature in the duct beyond the fan at 68 or 70 deg. by means of a graduated insertion thermostat connected with a by-pass damper beneath the heater. There are various other combinations of both the positive, graduated and multiple thermostat, which may be made according to the results desired. While the pneumatic type is commonly used for heating and ventilating work, electric thermostats are employed to a considerable extent in certain industrial processes, as for the control of electric heaters, magnetic gas valves, motor-operated pumps and compressors in refrigerating plants, etc.

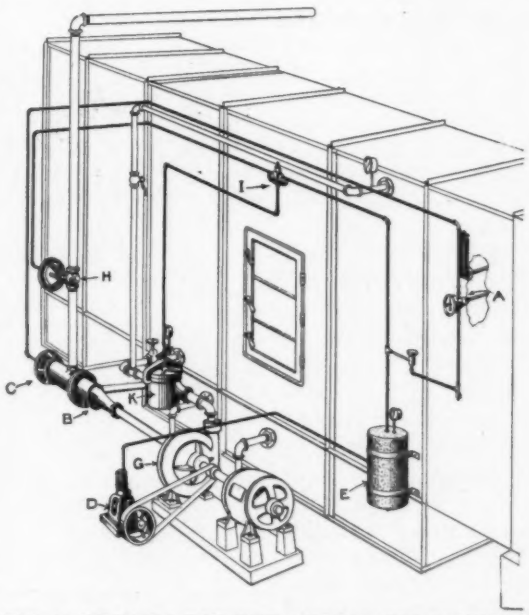


FIG. 10. DETAILS FOR THE AUTOMATIC CONTROL OF HUMIDITY BY MEANS OF AN AIR WASHER

Mention should be made at this point of the application of thermostatic control to the various industries, which includes a large number of conditions aside from the heating and ventilation of work rooms. Among these are flue gas temperature control, bak-

ing ovens for enamels and japans, drying rooms for various purposes, storage rooms for special materials, sterilizers and pasteurizers, refrigerating rooms, and for the temperature control of liquids of all kinds. In many cases apparatus is already installed for purposes of this kind so that its extension to the heating plant is a comparatively simple matter. One of the later improvements, in the way of detail, is the substitution of the all-metal pneumatic valve for the older type employing a rubber diaphragm, in places where it is exposed to a high temperature. If the matter of expense prohibits the use of automatic apparatus, then hand control should be brought to the highest efficiency by placing it in charge of one man in each room, and grouping the radiation so that regulation may be secured by the operation of a minimum number of valves, preferably one or two. In case of forced hot water, or the return-line vacuum system, this is generally possible. With the latter, a graduated hand valve in the supply main makes it a comparatively simple matter to regulate the steam supply to the heating requirements.

FIG. 11. ONE TYPE OF ATOMIZING HUMIDIFIER TO BE PLACED IN ROOM WHERE MOISTURE IS DESIRED

Humidity is commonly supplied in three ways, as follows: By evaporation in air washers, by delivering a fine spray directly to the air of the room through atomizing devices, and by the introduction of steam, usually by way of the hot-air ducts. Moisture is removed from the entering outside air by lowering its temperature below the dew-point, thus causing a portion of it to condense. Moisture formed inside the building, as in dye houses, laundries, and paper machine rooms, is removed by supplying large volumes of fresh air at as low a relative humidity as possible, which absorbs the moisture and thus carries it off, the saturated air being removed by exhaust fans or vent shafts.

The air washer, owing to other features which it possesses, is used more widely than any other device for humidity control in general ventilating work. In describing the method commonly employed for maintaining a constant relative humidity in combination with a predetermined inside temperature, we will use for purposes of illustration a standard type of machine, shown in Fig. 7. This consists of a casing containing the spray heads, spray chamber and eliminator, as illustrated more clearly in Fig. 8. The general location of the washer, with reference to the fan and heaters, is shown in diagram in Fig. 9. In action, air enters at the left, as indicated by the arrows (Fig. 8), passes through the spray chamber, where washing and the various interchanges of heat and moisture take place; then through the eliminator, which removes all unevaporated particles of water from the air. The pressure for producing the spray is furnished by a motor-driven centrifugal pump, the same water being used over and over again, with the exception of a certain amount admitted automatically by a float valve to replace that lost by evaporation. The temperature of the water is raised, as required, by a special steam heater located in the suction pipe of the pump. The general principle of operation for humidity control is as follows: "When air is brought in contact with a spray of water at a higher temperature, evaporation takes place, the latent heat being drawn from the water, until the air becomes fully saturated at the entering temperature. From this point on, if the contact is contained, the temperature of the air increases, which also raises its capacity for moisture, and we have saturated air constantly rising in temperature and absorbing more and more water in order to maintain this condition. A machine of the

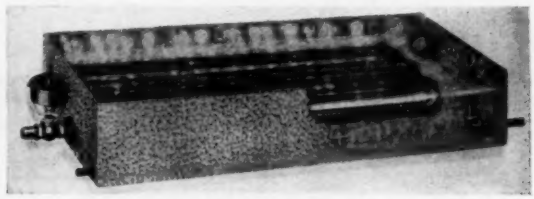


FIG. 12. PAN HUMIDIFIER EMPLOYING A SUBMERGED STEAM COIL

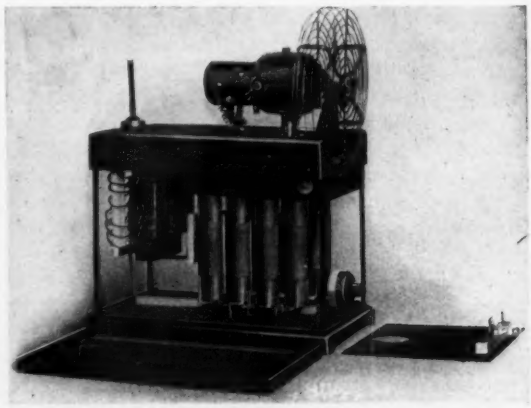


FIG. 15. STANDARD TYPE OF OZONATER (WITH CASING REMOVED) ADAPTED TO LARGE OFFICES, COLD STORAGE ROOMS, FACTORIES, AUDITORIUMS, HOSPITALS, ETC.

type shown in Fig. 7 utilizes this action by heating the spray to a point where saturated air will be delivered at such a temperature, that when raised to the desired room temperature, by re-heating, the contained moisture will be sufficient to give the required *relative* humidity at the latter or higher temperature.

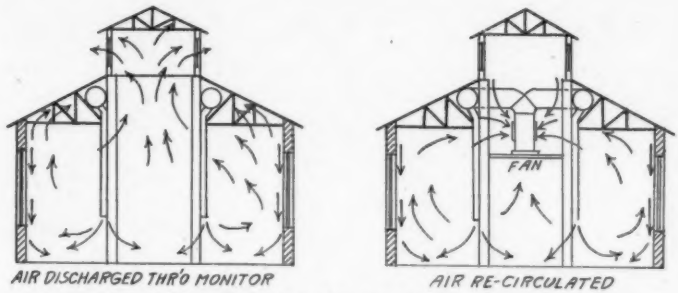


FIG. 13. TWO METHODS OF AIR DISTRIBUTION IN AN INDUSTRIAL BUILDING

For example, let it be desired to maintain a room temperature of 68 deg. with an ideal wet-bulb temperature of 57 deg. for the actual working conditions. Referring to Table III, we find for this condition each 1,000 cu. ft. of air should contain 0.549 lb. of moisture, which corresponds to a *relative* humidity of 51 per cent. and a *dew-point* of 49 deg. A dew-point of 49 deg. means that with the given amount of moisture (0.549 lb. per 1,000 cu ft.) air will become saturated at 49 deg., and any cooling below this point will produce condensation and the formation of dew upon surrounding objects. Hence, in this case, the spray should be heated to a temperature which will deliver saturated air, at 49 deg., to the re-heater (see Fig. 9), which, in turn, raises the temperature, without addition of moisture, to 68 deg. for delivery by the fan to the room to be ventilated. In operation the entering air is usually raised to a point well above freezing by the tempering heater, which is commonly equipped with hand valves. The re-heater is automatically controlled by a thermostat placed in the room, and set at 68 deg. for the case under consideration. A graduated thermostat, set at 49 deg., is located at A and maintains the air leaving the washer at the desired uniform temperature by varying the amount of steam admitted to the spray-water heater. In Fig. 10 A is the thermostat just referred to; B a steam heater of the ejector type, placed in the pump suction for heating the spray water; C is a diaphragm valve in the steam pipe to the heater, controlled by the thermostat; A D the air compressor for supplying the pressure tank E; H and I a safety device for shutting off steam in case of accident to the pump or thermostatic control; and K a strainer in the pump delivery pipe.

From the above, it is evident that fluctuations in the temperature of the entering air are cared for automatically by varying the temperature of the spray water, while the temperature and humidity of the air delivered by the fan are kept practically constant, as previously described. With air entering at temperatures above 49 deg., but containing less than the required amount of vapor, the action is slightly different, as the latent heat of evaporation in this case is drawn both from the air and water. The result of this is to cool the air somewhat, after which the water supplies the heat necessary to increase the evaporation to the desired point. If the moisture in the entering air equals or exceeds that required, no heating of the water will be necessary.

The action of the washer above described, as regards humidity control, applies only to the heating season. During the summer the problem is reversed and becomes one of cooling and de-humidifying.

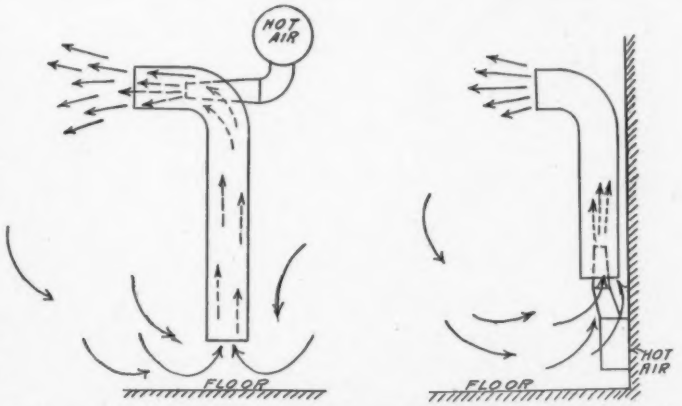


FIG. 14. TWO FORMS OF THE "CIRCULATING OUTLET". A PATENTED DEVICE FOR IMPROVING THE WARM AIR DISTRIBUTION IN CONNECTION WITH A FAN SYSTEM

The cooling effect obtained by re-circulated spray water is due entirely to evaporation, and at all other times when its temperature is at or above the dew-point of the entering air. The difficulty experienced under these conditions is the increase in humidity necessary to secure an appreciable cooling effect. With re-circulated spray water the relative humidity of the air leaving the washer will average about 85

per cent., which, at room temperatures of 75 to 80 deg., will prove very oppressive. If sufficient water is available from city mains or artesian wells to cool the spray to 3 deg., or more below the dew-point of the entering air, no evaporation will take place, and cooling will be effected by direct transmission of heat from the air to the water. Assuming a water temperature of 55 deg., and an air temperature of 80 deg., this condition will prevail for all relative humidities above 50 per cent. When this temperature difference exceeds 3 deg. moisture contained in the entering air will be condensed, thus lowering the humidity in proportion to the difference in temperature and the volume of water passed through the heater. For an air-cooling effect of 10 deg., with a rise in water temperature of 20 deg., it will require approximately 1.1 gal. of water per 1,000 cu. ft. of air.

When well water is not available, it is advisable to install a small refrigerating machine for cooling the spray. As to the amount of cooling possible under ordinary conditions, with re-circulated spray water, without refrigeration, we may expect a temperature drop of about 12 deg. in the air passing through the washer when the outside humidity is 30 per cent., and 4 to 5 deg. when it is 70 per cent. With spray water at a constant temperature of 55 deg., the drop in air temperature will be 19 and 15 deg., respectively, for the humidities noted above. As already stated, if the spray can be kept 3 deg. below the dew-point of the entering air, no increase in humidity will take place.

The following table will be found useful in this connection for determining the minimum water temperature necessary under varying atmospheric conditions:

TABLE X

Air Temperature, Deg. F.	Relative Humidity (approx.) 60 Per Cent.	70 Per Cent.	80 Per Cent.	90 Per Cent.
75	60	65	68	72
80	65	69	73	76
85	69	74	78	81
90	74	79	83	86
95	79	83	87	91

Various forms of atomizing humidifiers, which discharge the moisture directly into the air of the room in the form of a fine mist or widely used in connection with direct heating systems in shops and factories, especially in connection with textile work. Devices of this kind are independent of the ventilating system and are easily installed in plants already equipped with a fan and where the introduction of an air washer would be difficult or impossible. Humidifiers of this kind are independent of outside atmospheric conditions and are favored by some, particularly where the other features possessed by a washer are not required.

One form of spray humidifier is shown in Fig. 11, and consists of a cylindrical casing inside of which is an atomizing nozzle with a disc fan above it for forcing the moist air downward into the room through a diffuser at the bottom.

The device shown in Fig. 12 is for placing in the main air duct leading from a fan or large indirect heating stack, and consists of a steam coil submerged in a pan of water. This arrangement is made automatic by using a diaphragm valve on the steam supply controlled by a humidostat located in the room, and attaching a ball-cock to the water supply. Other humidifiers make use of perforated steam pipes covered with a suitable material to prevent noise from the issuing jets.

Air motion and distribution are so intimately connected that the two are best considered together. In providing sufficient air motion for carrying away the bodily heat and moisture, care must be taken not to introduce strong drafts directly upon the occupants of the room. In spaces heated by direct radiation, electric fans, when properly located, will usually greatly improve conditions in this respect. These are commonly placed along the outer walls and adjusted to throw the air slightly downward toward the center of the room, although much depends upon the general arrangement of the room and the occupation carried on within it. Smoke tests are often of much assistance in locating fans of this kind and in studying air currents and distribution.

When a fan system of ventilation is employed, air movement is easily taken care of in most cases by a proper arrangement of inlets and outlets. Common arrangements for the blower system are shown diagrammatically in Fig. 13.

In the case of industrial buildings, where the rooms are of considerable height, the problem is to obtain a continuous movement of warm air through the zone of occupancy without producing drafts which are either too hot or too cold. The natural tendency is for the cooler air to settle near the floor, while the upper part of the room becomes overheated, a condition which results in underheating the occupied zone and increasing the loss of heat through the roof. The usual method of meeting this has been to discharge the warm air downward, either from overhead inlets at a high velocity or through downtakes ending 3 or 4 ft. from the floor and allowing it to rise and escape by leakage through the walls and roof. This may be improved upon in many cases by re-circulating the air, or a considerable portion of it, within the building, drawing the supply from the upper part, thus reducing the temperature near the roof and tending to equalize conditions throughout the room.

Another plan, which requires a considerable outlay for ducts, is to discharge the warm air slightly downward at a comparatively low velocity and return it to the fan through openings in or near the floor. A patented arrangement, recently put on the market, which seems to possess decided advantages as regards air distribution and elimination of drafts, is shown in Fig. 14. The important feature in this case is a "circulating outlet" working on the ejector principle, which draws in cooler air from near the floor, mixes it with a jet of hot air, and discharges the mixture horizontally at a height well above the heads of the occupants. The result of this is a thorough distribution of both heat and air, and a slow downward movement toward the floor owing to the suction thus produced. The hot air delivered by the fan may be at a much higher temperature than is ordinarily possible, thus reducing the capacity of the ventilating equipment by at least one-half under ordinary conditions. The temperature of the air delivered to the room is less than 100 deg. in the most extreme weather, and as this is still further reduced by mixing with the air of the room, overheating near the inlets, a fault of the usual arrangement, is done away with. "Unit heaters" which draw their supply from near the floor and discharge it horizontally at an elevation, give much the same effect. These, however, operate entirely on the re-circulating principle, and do not, in general, introduce fresh air from outside.

The best method of handling dust depends upon its source. If it comes from the outside and is drawn in by the ventilating fan, the difficulty is removed by the installation of an air washer, which is also available for humidity control in the winter and cooling in the summer, if desired. When the dust is produced by mechanical processes within the building, as much as possible should be removed at the source by means of suitable hoods connected with a strong exhaust. This applies especially to grinding and polishing machines, sand-blast, woodworking machinery, etc. When the dust necessarily escapes into the room, as in flour and cement mills, from the cleaning of castings in foundries, and in certain departments of woodworking shops, it is necessary to employ general exhaust ventilation, which may usually be accomplished by means of the regular ventilating fan. That is, by installing an air washer and re-circulating the air, bacteria of certain kinds are eliminated with the dust in the process of air washing. These organisms do not, as popularly supposed, fly about in the air like insects, but are a vegetable growth attached to some form of organic matter upon which they feed. Removing organisms of microscopic size by mechanical means, that is, by straining the air, is not practical, of course, but it is entirely possible greatly to reduce their number by removing the substances upon which they exist.

Odors and fumes are treated much as fine dust, and should be taken at the source, whenever possible, through hoods connected with a strong exhaust. In certain cases, where they become diffused through the surrounding air, conditions may be much improved by general room ventilation, re-circulation through an air washer often proving effective and much more economical than discharging the air outboard.

A revival of interest in ozone, and a better understanding of its method of application to problems of ventilation, is of special interest in this connection. In its earlier applications, for the elimination of odors, the mistake was made of using a concentration of such strength as to prove an irritant, which has been found to be entirely uncalled for. For ventilating purposes ozone must be entirely odorless, and its detection in this way denotes too high a concentration. While it is not a stimulant, it has the effect of producing a refreshing exhilaration due largely to its power of destroying odors and giving relief from excessive heat. Just how the last condition is brought about is not clearly understood, although increased skin radiation has been suggested. That ozone prevents fatigue and increases the resistance of the body to disease seems to be an established fact, and it is desirable that ozonators be put on the same practical basis as other parts of a ventilating system.

The logical remedy for too great a proportion of carbon dioxide is evidently a larger supply of outside air, which is entirely feasible in most cases. This condition is not likely to occur, however, except in those industries where the gas is liberated in considerable quantities, as in the manufacture of carbonated waters, etc.

National Safety Council, 1921 Campaign

A plan to apply the Foch strategy which won the world war to the war on industrial accidents is announced at the headquarters of the National Safety Council in Chicago. For eight years accident prevention work, where it has been organized at all, has been conducted without any centralized control or direction. Although there has been through the medium of the National Safety Council a constant exchange of information regarding the most effective methods of preventing accidents, safety campaigns have been conducted independently in each of the 8,000 member plants of the Council. Despite the great strides which have been made in the prevention of accidents by these scattered campaigns, there are still approximately 22,000 workers killed,

and 600,000 injured in industrial accidents each year. It is expected that the new plan will make possible great reductions in these figures, and the saving of hundreds of thousands of dollars.

During 1921 the members of the Council under this new plan are for the first time attempting a unified and intensive accident prevention campaign. The plan announced by the Council calls for a concentrated attack, through all available means, on a different hazard each month, and these attacks are to be carried on simultaneously in all the plants operated by the members of the Council, except where special local conditions warrant alteration of the plan developed at headquarters.

Thus during January in approximately 8,000 industrial plants, mines, railroads and other public utilities throughout the country a special campaign was conducted against ladder accidents. It is estimated that 1,000 persons are killed in ladder accidents each year. The February campaign, now under way, is against neglect of minor injuries and infections arising therefrom.

Campaigns are announced for the other ten months against the following hazard:

March ..... Unsafe Clothing
April ..... Horse Play
May ..... Hand Tool Hazards
June ..... Standing or Sitting in Dangerous Places
July ..... Machinery Hazards
August ..... Inattention
September ..... Fire
October ..... Health Hazards
November ..... Careless Handling of Materials
December ..... Eye Injuries

Smokeless Cities May Be Achieved

Engineers Tell How Billions May Be Saved

Two billions can be added to the nation's wealth and the smokeless city achieved if coal waste, called medieval and inexcusable, is checked by municipalities, according to a statement of the committee on information and service of the American Society of Mechanical Engineers' Fuel Section, made public at the society's headquarters, 29 West Thirty-ninth street.

"When American potatoes were first introduced in Europe they were condemned for human use even by church edict," says the statement issued through Walter N. Polakov, chairman of the committee, organized to gather information on the energy situation and make it available for the general public.

"The reason for this action," the statement asserts, "was imperfect knowledge of how to cook them. The equally unwholesome and rapacious way of using raw coal has no longer the excuse of imperfect knowledge of technique.

"Advance of engineering science and high prices of domestic and industrial coal and gas challenge the municipalities to put a stop to this medieval way of using raw coal. Bituminous coal, even of poor grades, can be distilled at low temperature and yield fertilizer and ammonia, benzol, a superior substitute for gasoline, tar, a basis of most of our dyes, medicine, chemicals and perfumes, and a surplus of gas.

"If the 400,000,000 tons of coal annually burned in this country is so treated, the following products will be obtained: "1,200,000,000,000 cubic feet of fuel gas, 4,000,000 tons of ammonia sulphate, 1,000,000,000 gallons of crude benzol, 3,600,000,000 gallons of tar and 288,000,000 tons of artificial anthracite. The use value of all these commodities will be nearly $4,000,000,000 instead of two billions' worth of raw coal.

"Municipalities, by underwriting such integrated multiple-production plants can serve the urban and suburban population with enormous economy by offering smokeless coal for domestic and industrial purposes; gas pre-eminently suitable for cooking, heating and lighting under mantles; tar for road surfacing, waterproofing, roofing, etc., and for chemical industries; benzol for automobiles and trucks; fertilizer for nearby farms and ammonia for ice plants, cleaning, hospitals, etc.

"The smokeless city will thus be achieved. At the same time large sums now spent for smoke abatement will be saved as well as gas oil and gasoline, and the price of coal and gas can be materially cheapened. District heating, electric service, power for trolleys and busses can be similarly included in this comprehensive plan of organizing cities to conserve our foundation of wealth—fuel."

Of Current Interest

Happenings and Comments in the Field of Architecture and the Allied Arts

Organization of Specification Writers Reports Progress

The American Specification Institute, concerning which preliminary announcements have been appearing from time to time in this journal, has now been incorporated and a permanent organization effected. The first Board of Governors consists of the following persons:

Chairman, Ralph W. Yardley, A. I. A., of Perkins, Fellows & Hamilton, architects; Executive Secretary, Gardner C. Coughlen, architect, of Weary & Alford, architects.

Chester L. Post, Mem. A. S. C. E., Secretary of the Condron Company, consulting engineers.

Frank A. Randall, Mem. A. S. C. E., of Berlin, Swern & Randall, architects.

Arthur T. North, Mem. A. S. C. E., architect and engineer.

We are advised that the response to the publication of the plan and scope of the Institute, which appeared in the February 16th issue of THE AMERICAN ARCHITECT, has been general and enthusiastic, indicating a keen appreciation of the proposed work.

The address of the Institute is 1144 American Bond and Mortgage Building, Chicago, Ill., to which inquiries concerning membership application blanks or other matters in this connection should be sent.

Will Teach Estate Management

A college of Estate Management has recently obtained a charter in England and will open in Lincoln's Inn Fields, London, in April. It is under the auspices of the Auctioneers' and Estate Agents' Institute and has for its principal aim the promotion by all educational methods of the study of subjects pertaining to the control of land and house property. Students intending to practice in the country will specialize in agricultural law and forestry. Tuition by correspondence is one of the contemplated methods and a course is planned leading to a B. S. degree in estate management recently instituted by London University. Land surveying, the valuation of land and buildings, the principles of taxation and the construction of buildings are subjects included in every course. The experience in England as elsewhere has been that the well-being and prosperity of tenants depend largely on the efficiency with which estates are managed, and recent investigations have shown a marked diversity of conditions not due altogether to the possession or non-possession of good intentions on the part of landlords but largely to the extent to which they have been able, either personally or through their agents, to react to changes in economic conditions and to base their relationship to their tenants upon familiarity with their everyday problems.

House Names

I liked the English habit of naming their houses it shows the importance they attach to their homes. All about the suburbs of London and in the outlying villages I noticed nearly every house and cottage had some appropriate designation, as Terrace house, Oaktree house, Ivy cottage, or some villa, etc., usually cut into the stone gate post, and this name is put on the address of the letters. How much better to be known by your name than by your number! I believe the same custom prevails in the country. . . It is a good feature. A house or a farm with an appropriate name, which everybody recognizes, must have an added value and importance.

—John Burroughs.

Rotch Scholarship Examinations

The preliminary examinations for the Rotch Traveling Scholarship will be held at the office of the Secretary, C. H. Blackall, 20 Beacon Street, Boston, on Monday and Tuesday, April 11 and 12, 1921, at 9 A. M., to be followed by the sketch for Competition in Design on Saturday, April 16. The successful candidate will receive annually for two years an amount which it is hoped will not be less than $1,400 per year, and maybe more, depending upon the funds, this amount to be expended in foreign travel and study during two years.

Candidates must be under thirty-two years of age and must have been engaged in professional work during two years in the employ of a practicing architest resident in Massachusetts. Holders of a degree from a recognized architectural school may present their certificates in lieu of the preliminary examinations.

Candidates are requested to register at the office

of the secretary as long before the examination as practicable.

For Government Service

United States Civil Service Commission announces an open competitive examination for architectural designer. Two vacancies in the Philippine service, each at $4,000 a year, and vacancies in positions requiring similar qualifications, at this or higher or lower salaries, will be filled from this examination, unless it is found to the interest of the service to fill any vacancy by reinstatement, transfer or promotion. Employes in these positions will be allowed necessary expenses when absent from headquarters in the discharge of official duties. Applications will be rated as received until June 1, 1921. Applications for information concerning examinations for the Philippine service should be addressed to the Civil Service Commission, Washington, D. C.

Scientists to Delve in Ruins of Old Palestine

The history of primeval man and the origin of the Canaanites will be sought by a party of scientists and biblical students when they leave in June for ancient Palestine. The archeological expedition will center its excavation activities on the site of Beth-Shan, one of the oldest towns mentioned in the bible. The work will be under the direction of the University of Pennsylvania museum and is expected to take three years.

Beth-Shan, at present a mount of earth near Mount Gilboa, west of the river Jordan, in the valley of Jezreel, has had at least seven cities built upon it by successive bands of conquerors. Beth-Shan is first recorded in the book of Joshua, in relating the failure of the Israelites to take the town from the Canaanites because the latter used "iron chariots" in their warfare.

It was also on the walls of Beth-Shan that the bodies of Saul and Jonathan were exposed after the fatal fight on Mount Gilboa when the town was finally seized by the northern Israelites.

Beth-Shan was later taken by the Egyptians who were followed by the Babylonians. Then the Scythians followed the Greeks under Alexander the Great, who changed the name to Scythopolis. Pompey succeeded Alexander and Beth-Shan took on a Roman grandeur.

The Arab bandits finally stole the last vestige of Roman power and turned it over to the Turk who were driven out in the late war by the British Expedition under General Allenby.

Napoleon the Great in his Syrian campaign fought one of his greatest battles on the town's site.

New York Society of Architects

A large and exceptionally interesting meeting of the New York Society of Architects took place on Tuesday evening, the 15th inst., at the Society's headquarters, the United Engineering Societies Building, West 39th street, Manhattan, President James Riely Gordon in the chair.

A main feature of the proceedings was a talk on the Production of Genuine Wrought Iron Pipe, by Mr. J. K. Aimes, of the Reading Iron Company, Pennsylvania. The lecture was illustrated by moving pictures, showing the whole process of manufacture, from the smelting of the iron ore to delivery of the finished product from the foundry. A rising vote of thanks was accorded Mr. Aimes at the close of his address.

Discussion of the Bill for the State registration of architects followed, and members were urged to write their respective representatives in Senate and Assembly to support the measure. The Bill of Superintendent Rudolph P. Miller, requiring registration of all persons applying for building permits and having charge of construction work, gave rise to considerable controversy. The good intent of the proposed measure was generally admitted, but on motion by Mr. Henry Holder, the Bill in its present form was finally disapproved.

The revival of the proposition to remove the three-family house from the jurisdiction of the Tenement House Department, was hailed with approval by the meeting, and members were urged to support the Bill now being brought before the Legislature by Assemblyman Walter F. Clayton.

After adjournment for refreshments, further reports were made and correspondence read. The treasury was reported to be in a very satisfactory condition, and five applications for membership were announced.

Birth of the Skyscraper

The skyscraper was undreamed of—until Whitelaw Reid laid the corner-stone of The Tribune building in 1874, states a recent biography by Royal Cortissoz. The Florentine campanile that he then lifted into the air gave his contemporaries what was, for them, a greater sensation than their descendants have received from Manhattan's tallest towers. Voyagers coming up the bay hailed it with astonishment, little imagining the formidable structures it foreshadowed. The sky-line it broke was that of an essentially flat, low-lying city. In Reid's eyes New York was not then precisely beautiful. So we may judge from the instructions he sent to Clarence Cook in 1870, with a request for a series of architectural articles. "What I want," he wrote, "is first a crisp editorial on the

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prevailing lack of architectural taste in New York, the dreary miles of brownstone fronts, the worthlessness of brownstone as a material for building, the monstrosities given us by our wealthiest men." Then article after article was to be written, discussing the question of architecture in our cities generally, but particularly in New York. The "frightful example" was to be fearlessly pilloried, and suggestions for a rational architectural reform were to be made. I happen to know that he never thereafter lost his interest in the physiognomy of New York or his solicitude for its betterment. He kept The Tribune always stanch for public improvements and a steady supporter of the Municipal Art Commission, when that serviceable body came into being.

Razing Paris Forts

Two thousand workmen's homes, an agricultural exposition building, and a city university are among the structures to be erected on the sites of the old fortifications of Paris. Rapid progress is being made in the work of razing the forts, according to advices received by the Bankers Trust Company, of New York, from its French Information Service.

Workmen's co-operative societies are demolishing Forts 61, 62 and 63 whose sites will soon be put at the disposal of the Minister of Agriculture. On one of these sites the palace for agricultural expositions will be located. Two bastions of Clignancourt have already been leveled and construction of modern homes for workmen is to be begun at this place within a year.

Parks, squares, landing places for aeroplanes and open grounds having three times the present area of parks within the city will be provided through the removal of the forts. The Municipal Council has approved the project for a Cite Universitaire adjoining one of the outlying parks. The protecting moats of the old fortresses will be used as reservoirs and the space between the fortification walls and the present military zone beyond them is to be occupied by a boulevard which will circle Paris entirely.

Tax Exemption Passed in New York City

All dwellings built in the city of New York from April 1, 1920, to April 1, 1922, are exempt from taxation for ten years, now that the bill has been passed by the Board of Estimate, the Board of Aldermen and signed by the Mayor. Single family houses up to $5,000 and two-family houses up to $10,000 will be tax free. Apartments are tax exempt at $1,000 a room, if not more than five rooms.

The first time the bill was brought up the Board of Aldermen denied its passage. That was in November. It only passed the Board of Estimate this time after "pulling teeth." It will be remembered that the ordinance was passed by the Legislature last October with the provision that the individual municipalities within the State would decide whether they wanted it or not.

Dr. Royal S. Copeland, city health commissioner, was pleased with the results and congratulated the board on its action.

"A lot of us fought hard for this Tax Exemption law. Building contractors and money loaning concerns assisted in its passage, and I believe the result will be an immediate home-building boom."

Passage of the ordinance should do much to stimulate the buying of vacant land for new building operations during the coming Spring and Summer, declared Joseph P. Day. By the terms of the new ordinance, he explained, stores may be installed on the ground floor, although the other floors must be used for dwelling purposes.

Personals

The architectural and engineering practice formerly carried on under the name of "Francis Chiaverini & Company," 117 Broadway, Providence, R. I., will be conducted in the future by Francis Chiaverini at the same address. Catalogues and samples desired.

Walter Thomas Williams, architect, No. 151 Fifth Avenue, New York City, desires manufacturers' latest catalogs and specifications to complete his files.

J. A. Pitzinger has moved from 607 Insurance Bldg. to 807 Southwestern Life Bldg., Dallas, Texas.

Ralph H. Oliver announces the re-opening of his office for the general practice of architecture at rooms 915 and 916, 115 South Dearborn Street, Chicago, Ill.

S. N. Crowen, architect, 838 Stock Exchange Bldg., Chicago, Ill., has rented offices in the new Wrigley building in that city, and will move there as soon as the building is completed, about May 1.

Frank Quinby, architect, has moved to 110 William street, New York City. He was formerly located at 92 Nassau street, that city.

Maxwell & Love, architects, have opened an office at 328 Frisco Bldg., Joplin, Mo.

A. L. Harris, architect, formerly located at 1504 H street, N. W., Washington, D. C., is now practicing at 728 Seventeenth street, N. W., that city.

Type of Bldg.	Location.	Type of Construction.	Equipment.	Foundations.	Total Cubic Feet	Contract Price or Bid Received	Cost Per Cu.Ft.	When Figures Were Taken.	
Church	Cambridge, Mass.	Fireproof; brick and terra-cotta walls; steel girders, concrete floors.	Heating, indirect steam; lighting, electric.	Reinforced concrete.	386,400	$400,000	$1.04	Dec., 1920	
Hospital	St. Joseph, Mo.	Fireproof; steel skeleton; ground and 1st floors reinforced concrete. Upper floors metal joist construction; walls brick and stone.	Vacuum steam heat; electric lights; modern plumbing; electric elevators.	Reinforced concrete.	1,400,000	750,000	.535	Fall of 1920	
Hospital	St. Joseph, Mo.	Fireproof; brick and stone bearing walls; interior construction reinforced concrete.	Vacuum steam heat; electric lights; modern plumbing; electric elevators.	Reinforced concrete.	530,000	300,000	.566	June, 1920	
High School	Winterset, Iowa	Fireproof; reinforced concrete; gypsum block partitions; finished floors, wood.	Vapor steam heat; electric lights; modern plumbing.	Mass concrete.	462,000	208,000	.449		
High School	Garland, Utah	Corridors, halls, boiler and coal rooms are fireproof. Balance non-fireproof. Brick walls. Floors, wood and cement.	Gravity low pressure steam heat; electric lights; high grade complete plumbing.	Mass concrete.	360,270	97,013	.261	Feb., 1921	
School	Peabody, Mass.	Non-fireproof; walls, brick; floors joist.	Heating, fan; lighting, electric; plumbing, Boston regulations; elevators, book lift.	825,000	412,990	.50	Concrete.	1920	
City Residence	Boston, Mass.	Fireproof; brick and terra cotta walls. Steel floor beams with terra cotta arches.	Hot water heat; electric lights; good grade plumbing; electric push button elevator.	Mass concrete.	180,000	270,000	1.50	July, 1920	
Pottery Plant	Louisville, Ky.	Mill construction; paving brick walls; steel girders and trusses. 1 3-4 inch floors; 1 1-8 inch maple surfacing; steel sash.		Waterproof concrete.	720,000	54,550	.075	Mar., 1921	
Factory	Newark, N. J.	Mill construction; brick walls; cement surfaced floors.	Steam heat; electric light; standard factory plumbing.	Mass concrete.	729,000	182,000	.25	Apr., 1920	
Factory	Newark, N. J.	Mill construction; brick walls; cement surfaced floors.	Steam heat; electric light; standard factory plumbing.	Mass concrete.	424,000	120,000	.282	Apr., 1920	
Warehouse	Rock Island, Ill.	Non-fireproof; brick walls; wood floors.	Steam heat; electric light; small amount of plumbing; sprinkler system; 1 elevator.	Mass concrete.	414,000	91,806	.22	Nov., 1920	
School	Miles City, Mont.	Fireproof, reinforced concrete; walls, brick; floors, slab concrete, maple in rooms, terrazzo in corridors.	Heating, steam; lighting, electric; plumbing, usual school sanitation (plunge, showers, etc.)	Concrete, reinforced.	1,091,000	240,000	.22	Jan. 15, 1921	
School	Detroit, Mich.	Fireproof, reinforced concrete; walls, brick; floors, reinforced concrete beams and hollow tile.	Heating, Plenum system; steam H and V; lighting, electric; plumbing, toilet rooms and laboratories, plunge, showers; elevators, electric.		3,144,000	1,523,000	.484	Jan. 13, 1921	
School	Stratford, Conn.	Non-fireproof; walls, brick; floor wood joist.	Heating, direct, indirect; lighting, electric; plumbing, individual w. c.—sewer.	Concrete.	496,614	251,000	.505	Dec., 1920	Elementary school, 16 rooms.
Residence	Portland, Oregon	Non-fireproof; frame and stucco. Good finish.	Hot water heat; electric lights; first class plumbing.	Mass concrete.	47,770	17,752	.371	1920	
Residence	Portland, Oregon	Non-fireproof; frame and stucco. Good finish.	Hot water heat; electric lights; first class plumbing.	Mass concrete.	28,350	9,682	.342	Oct., 1920	
Hospital	Junction City, Kan.	Fireproof; reinforced concrete; gypsum block partitions; composition floors.	Vapor steam heat; electric lights; modern plumbing; electric dumb waiters.	Mass concrete.	182,000	70,000	.384		
School	Morning Sun, Iowa.	Fireproof; reinforced concrete; and steel; gypsum block partitions; finished floors, wood.	Vapor steam heat; electric lights; modern plumbing.	Mass concrete.	400,000	170,000	.425	May, 1920	
School	Linwood, Kan.	Fireproof; reinforced concrete; gypsum block partitions; finished floors, wood.	Vapor steam heat; electric lights; modern plumbing.	Mass concrete.	350,000	140,000	.40	July, 1920	
School	Hartford, Conn.	Fireproof; concrete and steel; brick and tile walls; concrete floors.	Steam heat; Peerless Unit ventilating and direct radiation; electric lights. Porcelain plumbing fixtures.	Mass concrete.	382,200	182,504	.477	Dec., 1920	
School	Hopedale, Ill.	Corridors and stairs fireproof; balance semi-fireproof; brick walls; floors, wood and terrazzo.	Vapor steam heat; electric lights. 6 toilet rooms for pupils; 1 for superintendent; good grade fixtures.	Mass concrete.	405,165	116,759	.288	Jan., 1921	
School	Chandler, Ind.	Non-fireproof; brick walls; maple floors.	Direct indirect steam heat. Electric lights. High grade plumbing.	Mass concrete.	225,000	56,838	.252	Feb., 1921	

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Weekly Review of the Construction Field

With Reports of Special Correspondents in Regional Centers

Building Boom in New York City

Gain of 61½ Per Cent. in Plans Filed in First Two Weeks of Tax Exemption—President Curran Urges Loans for Building Operations—This Is Only a Start, He Says

FIGURES from February 26 to March 12 show that plans for homes for 1,076 families, as against 666 families for the same period in 1920, have been filed in New York City as the result of the tax exemption ordinance passed February 26 in that city exempting, for ten years, $5,000 of the cost of proposed homes.

This is an increase over 1920 of 410 families, or 61½ per cent. Out of the 1,076 families who will live in these new homes, 708 of them will be housed in one and two-family houses, as against 469 in tenement houses.

President Curran of the Borough of Manhattan states that almost every one of these homes will cost in the neighborhood of only $5,000. The exemption applies to those projects on which construction is actually begun before April 1 of 1922, and, with a tax rate of nearly 3 cents on the dollar, the saving in ten years will be nearly 30 to 40 per cent. of the house, according to President Curran.

"This," he points out, "insures the safety of the investment against a possible further fall in cost of buildings."

"Apart from the increase in the number of homes," President Curran continues, "the fact that nearly two-thirds of them are likely to house people who own their own little homes is a particularly satisfactory result of the tax exemption ordinance."

Speaking of what this unusual activity foreshadows, President Curran said:

"It must also be remembered that things in the building line take time to move. Plans of construction, financial arrangements, including the choice and purchase of a suitable site, cannot be made in a day or week. These splendid figures are only the first sign of a great building boom in the erection of homes. If this boom continues as it has begun, and I believe it will, the people of small means who must live and work in New York City will eventually find rent relief."

Regarding loans on building operations, President Curran emphasized that at this time he desired to make a public appeal to everybody who could lend money for building operations to give a generous and prompt response to the person who seeks his or her aid in the building of a home.

"No finer public service can be rendered today," he continued, "than the fiuancing of thousands of new little houses that we must have at once in New York if we are to stop the backsliding in health, morals and all that goes to make up civic well-being, due to congestion in living quarters. Returns on the money so invested are substantial and safe, and they bring, besides, a great benefit in the happiness, comfort and good citizenship that more homes insure to our city."

"Move Materials Now"

Prominent Cement Manufacturer Adopts This As Slogan for Early Construction Activities—The Reasons for Such a Slogan—Plenty of Cement Available—Time to Start Construction Work Is Now

One of the country's most prominent cement manufacturers has this to say about the "Building Demand":

A period of depression is largely a state of mind. We had one after the armistice. We are experiencing one now.

For a year or more up to several weeks ago the conduct of business resembled an obstacle race. Then railroad service was demoralized, production was low, labor scarce and inefficient, strikes frequent, materials hard to secure and high in price. It was difficult to get things done and everybody wanted to do them.

For the last several weeks business has had a clear way before it. Now railroad service is much improved, production is good, labor plentiful and more efficient, strikes infrequent, materials easy to secure and fairly low in price. It is easy to get things done—and apparently nobody wants to do them.

The construction industry illustrates this well. During the war building was held back by war restrictions. The result was a large accumulation of work waiting to be done when the armistice was signed. Yet everybody interested in construction work adopted a waiting attitude until about six months after the armistice. Then everybody who had building work to do tried to do it at once, but there was not enough transportation, labor and materials to go around. Prices soared—and the result was turmoil and disappointment.

Building conditions now are much the same as

when the armistice was signed. Because of the interferences just mentioned there is still a large accumulation of work waiting to be done. Yet everybody interested in construction work is adopting a waiting attitude. If continued it may result in turmoil similar to that experienced through the last half of 1919 and nearly all of 1920.

Everybody knows that there is a shortage of dwellings throughout the country and that rents are high. Rents will remain high until there are enough houses to supply the demand. But homes are not the only thing needed. Construction work must go ahead, notably highways and railroad improvements.

Plenty of Cement Available

All the foregoing explains features of the cement situation not generally known. Some people have feared that there will not be enough cement available to supply the needs of a large construction program. This is a mistaken impression based upon past difficulties. The trouble in the last year of unusually heavy demand has been not lack of cement manufacturing capacity, but inability on the part of manufacturers to keep their plants operating at capacity. The curtailment of cement production was caused by strikes and scarcity of labor at cement plants, strikes in other lines of industry on which the cement plants are dependent, such as strikes in the gypsum plants, the strike of coal miners a year ago, the strike of the Illinois-Indiana coal fields in July, the strike of railroad switchmen which extended throughout the greater part of 1920, and the general lack of transportation facilities, including embargoes on the railroads. The ratio of cement production to manufacturing capacity for the entire year 1919 was only about 54 per cent., and thus far (to the end of 1920) about 68 per cent. The capacity of all cement mills in the United States is 125 million barrels or more annually. The most cement ever used in the country in any previous year was about 94 million barrels in 1916. That is to say the country has never used as much as 75 per cent. of its productive capacity, conservatively estimated.

There is now and will be plenty of cement to supply the country's needs as long as transportation and other conditions permit cement mills to operate reasonably near full capacity and to ship the finished product.

Transportation Still a Problem

Many people are too complacent about the railroad situation. Undoubtedly railroad service has improved greatly through increased efficiency in operation, but the roads are not now called upon to do what they were called upon to do in 1920. Business in general is slowing down and farmers are holding back their products from the market. Business in general is sure sooner or later to revive, and the farmer to send his stored products to market. When both or either of these things occur the railroads will again have more than they are able to do. If everybody wants cement, the farmer turns loose his grain, and business in general quickens, all at the same time, a lot of people are going to be disappointed by delays in their work.

At a time like this when owners, contractors and others may be discouraged from undertaking new projects, the fact should be given prominence that all effort, whether it be in the form of money, credits, materials, labor, transportation or what not, that goes into construction work, unlike that going into work of many other kinds, is not consumed. Effort expended throughout the country on many things that are consumed might well go into construction work, where the materials and labor and other things involved are not consumed but transformed into houses, industrial buildings, improved highways, water-power development and other valuable improvements that form additions to the permanent, taxable wealth of the country as well as tools for production of additional wealth.

If construction work is needed and if such wealth will add to the permanent wealth of the individual and the country at large, it should be carried on when not subject to interferences that have been present almost continuously since our entry into the war and which may again be present later.

The time to start this construction work is now.

Building Situation in the Middle West

(By Special Correspondence to The American Architect*)*

Gilmore, Chicago—There is everything to report regarding the building situation in Chicago except building. The air is full of plans and panaceas for the dearth of building, but when it comes right down to actual construction work there seems to be a decided hitch, with the result that construction is at a very much less than normal pace, though it is giving signs of improvement here and there.

Although the March building permit report has not been made public, it will show a good gain over March of last year and an even better gain over February of this year. Each day sees a gain in the number and value of permits issued, but it is unfortunately true that the issuance of a building permit is not necessarily followed immediately by a start of the building itself. Permits have been issued for several important business structures in the Loop district, but none of these has yet been started, though one or two important items of

building are scheduled to get under way very shortly.

The principal activity in building continues to center in small homes and the chief points of activity are in the surburban towns at the edge of Chicago. During the last week or so there have been some rather pretentious permits issued for apartment buildings, but mainly this branch of building is being held up while the rent situation is being threshed out in the state legislature. There is now pending before the legislature a measure known as the Kessinger bill, which would permit the appointment of a commission in the larger cities to determine just what constitutes a fair rental schedule. The Kessinger bill is an emergency measure and would not extend its authority for a longer period than 1925. Apartment dwellers organized into a tenants' protective association invaded the legislative precincts last week by special train to impress upon the legislators the importance, even necessity, of passing the Kessinger bill. Impressed by the numbers of the visitors, the legislature was more or less inclined to go through with the bill. Opponents of the bill were given their day in court, however, and they took occasion to point out that such legislation would serve as a further obstacle in the building hurdles and that it would prove a boomerang, if enacted, which would be most keenly felt by the tenant. Among opponents of the plan were representatives of various real estate organizations, building contractors and others. Apartment owners, apparently, are not very well organized to fight the bill and the general feeling is that the measure will be passed within a short time, however problematic its effect upon building.

The state legislature is also dipping another finger into the Chicago building situation by sending a joint committee of seven representatives and seven state senators here to investigate the alleged nefarious combine in which millwork manufacturers, contractors and union labor leaders are charged with having conspired to keep building costs up by keeping non-union building supplies out of the city.

This state of affairs has already had investigation at the hands of a federal grand jury, which returned more than forty indictments against firms and individuals. The cases, thus far, have not come to trial. It will be seen that the state officials are bestirring themselves to help the situation, but out of the whole thing there has come, thus far, very little actual encouragement of the hope that this official paternalism will really amount to anything in putting one brick on top of another.

The suggestion of bricks brings to the fore a battle which has been waged and is still being waged here between the proponents of the lumber trade and the folks who are engaged in manufacturing or selling other lines of building material. The question has resolved itself into the following statement: "Has lumber taken its loss in the economic readjustment and is it at present the cheapest available building material?"

F. E. Davidson, president of the Illinois Society of Architects, recently gave a statement to the press in which he said that lumber is 150 per cent. higher than it was at its pre-war peak in 1914. This statement won instant protest from N. A. Mather, president of the Lumbermen's Association of Chicago, who avers that Mr. Davidson's figures are inaccurate. He brings forward a substitute table of lumber values, in which he estimates the present standard of lumber prices to be only about 64 per cent. above the 1914 peak. So bitter has the contest grown that the Lumbermen's Association has offered to turn over $1,000 to charity if the figures submitted by Mr. Davidson can be substantiated by evidence submitted to an unprejudiced committee.

About the only general effect which seemingly has been created by this public argument is that of fortifying the public feeling that prices of lumber and all other building materials are higher than they will be later on and thus is bolstered the general determination of those contemplating building to wait and see what is going to happen.

Offsetting the watchful waiting policy is the interest being created by the "Own Your Home" Exposition, which is now open at the Coliseum for a ten days' run. Every inch of available space in the Coliseum has been taken, and the general assemblage of exhibits is a very excellently staged argument for home building right now. Architectural interests are well represented at the exposition. Architects are predicting that there will be a considerable increase in the demand for home plans following the exposition.

Demand in the local lumber and materials market continues to be very quiet. Spot business is in very small volume, and the market holds steady at old prices for the principal reason that demand is insufficient to establish a stable price list. Present quotations are:

Yellow Pine: B. & B. 1-in. $95 to $130, depending on thickness; 2 x 4, No. 1, 10 to 16 ft. length, $51 to $53; 2 x 6, $48; 2 x 8, $50; 2 x 10, $53; 2 x 12, $55; 13-16 x 3 1-4 z & b flat flooring, $85 to $90; 1 x 6, No. 2 common, $48 to $90. *Douglas Fir*: 2 4 S, in sizes up to 12 x 12, in length up to 32 ft., $65 to $70; 14 x 14, $68 to $73; 16 x 16, $72 to $75; 18 x 18, $75 to $80. *Hard Maple*: Four 1-4 No. 1 and 2, $135; select $120; No. 1 common, $100; No. 2 common, $65; No. 3 common, $32. *Birch*: Four 1-4 No. 1 and 2, $160; select, $133 to $138; No. 1 common, $95 to $100; No. 2 common, $60 to $65; No. 3 common, $40. *Red Gum*: Four

¼ No. 1 and 2, $150; No. 1 common, $90 to $92; No. 2 common, $45.

Face Brick—Standard, vitrified red, $32.00@34.00; Smooth, Indiana red, $38.00@40; Smooth, Ohio red, $38.00@40.00; Smooth, Pennsylvania red $46.00@48.00; Smooth, buff, $45.00@47.00; Smooth, gray, $47.00@49.00; Rough, buff, $44.00@46.00; Rough, gray, $47.00@49.00; Variegated, rough texture, $34.00@49.00.

Common brick, $13.00 to $16.00 per M. Portland cement, $2.25 per bbl. Torpedo—Lake and bank sand, $3.50 per yd. Crushed stone, gravel screenings, $3.50 per yd. Hydrated lime, Ohio, paper, $21.00 per ton. Hydrated lime, Ohio, cloth, $29.00 per ton. (Includes sacks at 30c each). Hydrated lime, Wis. paper, $19.00 per ton. Bulk lime, $1.65 per ton.

Building News from the Pacific Coast

(*Special Correspondence to* THE AMERICAN ARCHITECT)

SEATTLE.—Pacific Coast jobbers are less concerned today in prices of pipe and sheet metals, including the popular building sizes, than in the demand, as stock now in the warehouses will take care of the movement at the present rate through the building season. Buying orders have ceased in both commodities, although arrivals on previous orders will continue for several weeks.

Jobbing interests seem to be satisfied for the present that the independent mills have cut prices on sheets and pipe to their limit, and that the next move must come from the corporation group. There have been some conjectures as to what they will do, particularly if Belgian mills offer steel on the Pacific Coast. Transportation would offer no difficulties. Belgian steel could be loaded on the Atlantic and taken through the Panama Canal and discharged on Puget Sound or other Pacific ports. Prices quoted are not yet within reach here and no freights are offered. Large offers, Coast jobbers believe, would have a bearish influence on all American mills.

The cement market is steady. With extensive roadbuilding programs in view according to appropriations at the present session of the Legislature, cement manufacturers believe they have enough business in sight to keep them in full operation during the season. These manufacturers tried last fall to operate all winter in order to have an accumulated supply for the spring and summer demand, but financial conditions would not permit. It is the claim of the Coast cement interests now, as for the past five years, that the plants are incapable of meeting the demand when run at full capacity through the summer unless a winter's production is ready as a reserve. Jobbers do not therefore look for any radical fluctuations in the cement market.

Metal lath is weak. Jobbers are receiving frequent new price lists, and all seem to be headed downward. There has been some reduction in roofing and plaster board, and stocks are heavy. Buying has practically ceased.

The brick market is weak. Local manufacturers have steadily avoided operation beyond the point of active demand where possible due to high fuel and labor costs, and the plants have no accumulated stocks.

The board of public works of Seattle at a meeting this week ordered that Hendrickson & Alstrom, successful bidders on the job of building a new city fire station, pay the wage to building trades in effect at the time the contract was let. The contractors sought to reduce the wages 25 per cent. as of February 1, but the Allied Building Trades resisted. Building laborers on this job will therefore get $6 per day.

Shippers handling building materials were notified that after June 1 all North Coast railway lines will abolish the combination carload rate and will make either through or proportionate rates. Materials affected are brick, cement, plaster, lime, clay products and gravel or broken or crushed stone. Shippers are preparing a protest.

The assessed valuation of Seattle city property for 1919 was $241,294,294 against $229,106,911 for the preceding year. The value of its building permits for 1920 was $13,760,090, fourth down the list since 1908. The value of property exchange in 1920 was $21,253,522.

The fir lumber market is steady. Eastern buyers are holding off until the new lower transcontinental rail rates can be instituted, which the carriers promise by April 1. Mills and wholesalers expect considerable new business from the East next month. Buyers express their conviction that fir lumber has struck bottom, but financing has not been easy.

Average prices at the mill for fir lumber during the week were $10.50 for common dimension, $40 for finish, $20 for drop siding, $12.50 for boards and shiplap, $16.50 for plank and small timbers, $43 to $49 for vertical grain flooring, and $23 to $27 for slash grain flooring.

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